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UNITED STATES PATENT AND TRADEMARK OFFICE

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U.S.
DEPARTMENT
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 24, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 19, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,310,925 through 4,312,075
Reissue Patents based on the above identified patents.	

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely [payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the

indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

No Issues This Publication.

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

THE UNIVERSITY OF MICHIGAN
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DEPARTMENT OF COMMERCE

Patent and Trademark Office
37 CFR Part 1

Proposed Rules for Miscellaneous Patent Provisions

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of Proposed rulemaking

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the miscellaneous patent provisions enacted into law by Public Laws 98-620 and 98-622, on November 8, 1984, in which statutory invention registrations, changes in appeals to the courts, prior art and joint inventor provisions and PCT international application filing and processing procedures were established or amended. These proposed changes provide specific rules and procedures for the new and amended provisions.

DATES: Comments must be submitted on or before February 8, 1985; a public hearing will be held on February 8, 1985, at 1:30 p.m. Requests to present oral testimony should be received on or before February 4, 1985.

ADDRESSES: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: R. Franklin Burnett, Room 3-11A13. The hearing will be held in Room 11C10, on the 11th floor of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to establish a set of rules and procedures for the various requirements of Public Laws 98-620 and 98-622 concerning appeals to the courts, statutory invention registrations, rejections based on prior art and double patenting, and filing of international applications under the Patent Cooperation Treaty.

BACKGROUND INFORMATION: Most of the proposed rule changes contained herein are necessary as a result of Public Laws 98-620 or 98-622, both of which were signed by President Reagan on November 8, 1984. The following is a summary of the purposes of the various statutory amendments.

Amended 35 U.S.C. 103 - Unpublished knowledge of prior art.

Public Law 98-622 changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations. It amended

35 U.S.C. section 103 by adding a new sentence which provides that subject matter developed by another which qualifies as "prior art" only under subsections 102(f) or (g) of 35 U.S.C. is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made.

"Prior art" is the existing body of technical information against which the patentability of an invention is judged. Publicly known information is always considered in determining whether an invention would have been obvious. However, under In re Bass, 474 F.2d 1276, 177 USPQ 178 (CCPA 1973), and In re Clemens, 622 F.2d 1029, 206 USPQ 289 (CCPA 1980), an earlier invention which is not public could have been treated under 35 U.S.C. 102(g), and possibly under 102(f), as prior art with respect to a later invention made by another employee of the same organization.

New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. Public Law 98-622, by disqualifying such background information from prior art, encourages communication among members of research teams, and leads to more public dissemination through patents of the results of team research.

The subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 102(g). If the subject matter qualifies as prior art under any other subsection--e.g., subsection 102(a), 102(b) or 102(e)--it will not be disqualified as prior art under the amendment to section 103.

The contents of a patent of the same or different ownership as an application, continues to be available as prior art against the application under section 103 by virtue of section 102(e) as of the application filing date of the patent. If subject matter becomes potential prior art under section 102(e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined into a single application and such subject matter (with the abandonment of the two applications) would no longer constitute potential prior art under section 102(e) or under section 103 since it would not "be described in a patent" while the application is pending.

It is important to recognize that the amendment to the law applies only to consideration of prior art for purposes of section 103. It does not apply to or affect subject matter which qualifies as prior art under section 102. A patent applicant urging that subject matter is disqualified has the burden of establishing that it was commonly owned at the time the claimed invention was made.

Public Law 98-622 was not intended to permit anyone other than the inventor to be named in a patent application or patent. Also, the amendment was not intended to enable appropriation of the invention of another.

The Patent and Trademark Office has withdrawn the Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967), to the extent that it does not authorize a double patenting rejection where different inventive entities are present. The Office is reinstituting, in appropriate circumstances, the

practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. See 130 Cong. Rec. H10527, column 3 (daily ed. Oct. 1, 1984)(statement of Rep. Kastenmeier); In re Rogers, 394 F.2d 566, 567 n. 4, 157 USPQ 569, 570 n. 4 (CCPA 1964). This is in accordance with existing case law and prevents an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See In re Zickendraht, 319 F.2d 225, 138 USPQ 22 (CCPA 1963) ("The doctrine is well established that claims in different applications need be more than merely different in form or content; and that patentable distinction must exist to entitle applicants to a second patent") and In re Christensen, 330 F.2d 652, 141 USPQ 295 (CCPA 1964)("...the correct procedure for double patenting cases is to analyze the claims to determine the inventions defined therein, and then decide whether such inventions, as claimed are patentably distinct and therefore qualified to be claimed in separate patents"). In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming, pursuant to the existing provisions of 37 CFR 1.321, the terminal portion of the term of the later patent and including in the disclaimer a provision that the patent shall be enforceable only for and during the period the patent is commonly owned with the application or patent which formed the basis for the rejection, thereby eliminating the problem of extending patent life.

Information learned from or transmitted to persons outside the organization is not disqualified as prior art.

The term "subject matter" will be construed broadly, in the same manner the term is construed in the remainder of §103. The term "another" as used in §103 means any inventive entity other than the inventor and would include the inventor and any other persons. The term "developed" is to be read broadly and is not limited by the manner in which the development occurred. The term "commonly owned" means wholly owned by the same person, persons, or organization at the time the invention was made.

Amended 35 U.S.C. 116 - Joint inventor filing

35 U.S.C. 116 as amended by Public Law 98-622 recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions.

Amended 35 U.S.C. 116 allows inventors to apply for a patent jointly even though (i) they did not physically work together or at the same time, (ii) each did not make the same type or amount of contribution, or (iii) each did not make a contribution to the subject matter of every claim of the patent. Items (i) and (ii) adopt the rationale stated in decisions such as Monsanto v. Kamp, 269 F. Supp. 818, 154 USPQ 259 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as SAB Industrie AB v. Bendix Corp., 199 USPQ 95 (E.D. Va. 1978).

Like other patent applications, jointly-filed applications are subject to the requirements of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application complying with 35 U.S.C. 120 would be entitled to the benefit of the earlier filing date of the original application.

It is possible that different claims of an application or patent may have different dates of invention even though the patent covers only one independent and distinct invention within the meaning of 35 U.S.C. 121. When necessary, the Patent and Trademark Office or a court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Amended 35 U.S.C. 120 - Benefit of prior U.S. application

35 U.S.C. 120 was amended by Public Law 98-622 to provide that an application can obtain the benefit of the filing date of an earlier application when not all inventors named in the joint application are the same as those named in the earlier application. This amendment permits greater latitude in filing "divisional" applications. For example, if the previously filed application named inventors A and B as the inventors, a later application by either A or B could be filed during the pendency of the previously filed application and claim benefit of the previously filed application. In order for a claim to be entitled to the benefit of an earlier pending application, the subject matter of the claim of the later application would have to be disclosed in the earlier application.

Similarly, if inventor A filed an application on an invention and during the pendency of that application made an improvement on the subject matter of the application as a joint inventor with inventor B, the joint application filed on behalf of inventors A and B could claim the benefit of A's previously filed sole application to the extent that the later filed joint application contained claims directed solely to A's subject matter which was disclosed in the earlier filed pending application in the manner provided by the first paragraph of section 112 of title 35, U.S.C.

Likewise, an application filed by inventors A and C could claim the benefit of an earlier filed pending application of inventors A and B, to the extent that the requirements of section 120 could be met.

Like other patent applications, jointly-filed applications will continue to be subject to the requirement of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application would be entitled to the benefit of the earlier filing date of the original application.

New 35 U.S.C. 157 - Statutory Invention Registration (SIR)

This section which is effective on May 8, 1985, establishes an optional procedure by which an inventor may secure protection which is strictly defensive in nature.

Under current law, there is no simple, practical method by which an inventor can protect his or her ability to exploit the invention without obtaining a patent. The new procedure confers on an inventor the same defensive rights that a patent provides to prevent others from patenting the invention. However, it does not permit the holder to exclude others from making, using or selling the invention.

Due to the fact that a SIR does not grant an exclusive right to an inventor, it is not necessary to subject a SIR to the lengthy examination process required for the granting of a patent. Such an

examination is necessary if the SIR is subject to an interference proceeding to determine priority of invention. In all other instances, the Patent and Trademark Office will only review the application for adherence to formal printing and fee payment requirements and to ensure that the requirements of 35 U.S.C. 112 are satisfied.

An applicant desiring to have a SIR published will be required to file a regular complete application for a patent and to execute a request including a waiver of enforcement of patent rights. This waiver of the claimed invention will be effective at the time of publication. The original application can be abandoned in favor of a continuation or a continuation-in-part application for a patent, claiming the filing date of the earlier filed application, by filing an express abandonment of the original application and a timely petition to withdraw the request for a SIR prior to publication of the SIR, thereby providing the applicant with flexibility during the pendency period of the application. Until the SIR is published the application remains an application for a patent. However, the holder of a SIR will not be able to file a reissue application to recapture the rights to exclusive use that were waived by the initial publication of the SIR.

The waiver of the right to receive a patent, required of all applicants electing to receive a SIR, applies to those remedies provided for the enforcement of a patent under section 183 and sections 271 through 289 of title 35, United States Code. The waiver also applies to remedies under other titles of the United States Code including sections 1337 and 1337a of title 19, section 2356 of title 22, and section 1498 of title 28. This waiver of enforcement applies only to the claimed subject matter of the SIR and not to any foreign patent arising from an application which might have served as the basis of a priority claim under the Paris Convention for the Protection of Industrial Property. Likewise, the waiver does not prevent the holder of a SIR from asserting any defenses provided in sections 271 through 289 of title 35, U.S.C. with respect to a charge of infringement of any other patent.

The Commissioner of Patents and Trademarks can refuse to accept the waiver in certain cases. For example, the waiver could not be accepted if the waiver is not a waiver of all the previously mentioned rights. The Commissioner also has discretion to set time limits on the waiver. This would allow the Commissioner to limit the ability of an inventor to keep inventions secret through a series of continuing patent applications followed by a conversion to a SIR.

The waiver of patent rights in the SIR to the subject matter claimed therein may affect the patentability of a claim in other related applications, particularly divisional applications, since the waiver of patent rights would be effective for all inventions claimed in the SIR and would be effective as a waiver of the right of the inventor to obtain a patent on the invention claimed in the same application or any other application, but not in any patent issued before the date the SIR is published. Where an application containing generic claims is published as a SIR, the waiver in that application applies to any other related applications, including divisions, continuations, and continuations-in-part, to the extent that the same invention claimed in the SIR is also claimed in the other related application.

The Patent and Trademark Office will apply standards similar to those which it applies in making determinations of "same invention" and "obvious type" double patenting for purposes of determining whether or not a waiver by an inventor to claims in a SIR precludes patenting by the same inventor to subject matter in any other related application.

Therefore, the waiver would preclude patenting of an invention claimed by an inventor in a related application which is the same as, or not patentably distinct from, the invention claimed by the same inventor in the SIR. When making this determination it is the claimed subject matter of the SIR which is compared to the claimed subject matter of the related application. Where the subject matter claimed in the related application is not patentably distinct from the subject matter waived in the SIR, the claims of the related application will be rejected on the grounds of double patenting as being precluded by the waiver in the SIR and cannot be overcome by a terminal disclaimer. If a divisional application is filed and published as a SIR claiming only a method, publication thereof will not normally effect a waiver on an application for a patent claiming only an apparatus. The waiver in a SIR would not affect any rights in a patent which issued prior to the date of publication of the SIR, but would preclude an already issued patent from being broadened by reissue if the rights to the subject matter to which broadened claims relate have been waived by publication of the SIR. The waiver applies to any rights of the same inventor in any application pending when the SIR is published even if the inventor is a joint applicant in the pending application and was a sole applicant in the application published as a SIR. The waiver would not affect the rights of any other inventor even though those rights are commonly owned by the same person.

The holder of a SIR containing the required waiver will be left without the offensive rights associated with a patent. In other respects a SIR will be the same as a patent, including the application which is published as a SIR serving as the basis for a priority claim in a foreign application under the Paris Convention. A SIR will be treated the same as a U.S. patent for all defensive purposes. The application, and the SIR published therefrom, could become involved in an interference; the SIR would be a "constructive reduction to practice" under 35 U.S.C. 102(g); it will be "prior art" under all applicable sections of 35 U.S.C. 102 including section 102(e); and it will be classified, cross-referenced and placed in the search files, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the Official Gazette of the Patent and Trademark Office. A published SIR is intended to be a fully viable publication for defensive purposes, usable as a reference as of its filing date in the same manner as a patent. A SIR will also serve as a basis to initiate or participate in an interference or priority proceeding under 35 U.S.C. 291 in a manner similar to a patent and can be used as a reference in defense of an infringement suit.

A SIR is based on a regularly filed application for a patent. Therefore, the filing date of the application will be a sufficient basis for a priority claim in a foreign application. Article 4, section A(3) of the Paris Convention states:

> "By a regular national filing is meant any filing that is adequate to establish the date on which the application was filed in the country concerned, whatever may be the subsequent fate of the application."

After a SIR is published, markings such as "patent pending" are improper under section 292 of title 35 of the United States Code.

The SIR will serve as a replacement for the current "defensive publication program" which was established by regulation under 37 CFR 1.139. Although publication under the "defensive publication program" was intended to provide rights similar to those of the SIR, publication under that program has been held not to be available as evidence of prior knowledge as of its filing date under section 102(a) of title 35, U.S.C. (Ex parte Osmond, 191 USPQ 334 (P.T.O. Bd. App. 1976)). The use of a "defensive publication" as a reference to prevent a patent from issuing on a subsequent application is therefore limited. A SIR, on the other hand, will have a clear statutory basis in title 35, U.S.C. The SIR will be "prior art" and a "constructive reduction to practice" under section 102(a) and section 102(g), respectively, as of the filing date of the application on which it is based.

A SIR will not be subject to reexamination under sections 302 to 307 of title 35, United States Code.

The Commissioner is authorized to issue SIRs for defensive purposes, but is not required to do so. The Commissioner has discretion in determining whether or not a SIR should be issued on a particular application. In circumstances where the subject matter is obviously not an invention, is too informal to print, and so forth, the Commissioner has the right to refuse to publish the SIR.

SIRs will be published sooner than patents because no substantive examination will normally be required for SIRs. To the extent that examination is required, it will be conducted in the same manner as in any other patent application. Maintenance fees will not be charged for SIRs.

Since the fees set by the Commissioner for the new SIR procedure under section 157 of title 35, U.S.C. are not established under section 41(a) or (b) of that title, they are not subject to reduction if the applicant has small entity status.

If the fee for publication is not paid at the time of filing of the waiver of the right to receive a patent, the Commissioner may set a period within which the fee must be paid to prevent abandonment of the application. Such a period would be subject to petitions and fees for extensions of time. If abandonment should occur, the application may be revived.

In the final analysis, the SIR procedures set forth in the law should give inventors a limited form of protection more cheaply than they could get by obtaining a patent. The procedure will allow the government and the private sector to make inventions public knowledge. Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new, less expensive alternative to the traditional patenting of inventions.

Amended 35 U.S.C. 361, 366, 371, 372 and 376 - Miscellaneous provisions relating to the applications under the Patent Cooperation Treaty.

Section 361(d) of title 35, United States Code, was amended effective May 8, 1985, to provide a one-month grace period from the date

of filing an international application for payment of the basic international fee and the transmittal and search fees.

Section 366 of title 35, United States Code, was amended, effective May 8, 1985, to clarify the effect of withdrawal of an international application on claims for the benefit of its filing date.

The withdrawal of an international application designating the United States will not deprive an applicant of the right to claim the benefit of the filing date of such an international application in a later filed application, provided the claim for benefit is made before that international application is withdrawn. Stated otherwise, this clarifies that withdrawing the designation of the United States in an international application is comparable to abandoning a national application as far as a claim for an earlier filing date is concerned.

National Stage

As a general proposition, the amendments made to 35 U.S.C. 371 set forth a legislative scheme, effective May 8, 1985, to provide greater flexibility in the Patent and Trademark Office for the handling of international applications. In addition, by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, the amendments give international applicants benefits similar to those given national applications by section 111, 35 U.S.C. as amended by Public Law 97-247 with respect to the time for filing the national fee and oath or declaration.

Section 372(b) of title 35, United States Code, is amended, effective May 8, 1985, to authorize the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases is necessary since subsection (c)(2) of section 371 was amended to remove the requirement that the translation be verified in all cases.

Section 372(c) of title 35, United States Code, was deleted thereby discontinuing the requirement for payment of a special fee to maintain claims in an international application which were not searched by an international searching authority. This deletion was made to place international applications processed in the national stage on the same footing as purely national applications.

Section 376(a) of title 35, United States Code, was also amended by Public Law 98-622 to delete mention of the special fee in order to conform with the amendment of section 372(c).

DISCUSSION OF SPECIFIC RULES

Some of the rules to which changes are proposed in this Notice have been changed effective February 11, 1985, by a notice of final rulemaking published on December 12, 1984, at 49 Fed. Reg. 48416-48471. The amendments contained in this notice are being proposed to the rules as they will be effective on February 11, 1985.

Section 1.11, if amended as proposed, would add a reference to published statutory invention registrations in paragraph (a) to indicate that they are available to the public. The portion of present §1.11(a) which deals with interferences would be transferred to a new paragraph and rewritten.

The proposed amendment to paragraph (b) would delete reference to §1.139, which is proposed to be deleted in favor of the SIR, and would insert language which would cover opening to the public defensive publications published under §1.139 as well as other applications laid open to the public such as the previously published abstracts and abbreviatures.

Section 1.11, if amended as proposed, would delete the word "general" before public as unnecessary.

New paragraph (e) of §1.11, if added as proposed, would cover the availability to the public of all interferences, including those which involved a statutory invention registration. This paragraph applies to interferences declared under the new rules which become effective on February 11, 1985, 49 F.R. 48416, (Dec. 12, 1984) as well as the rules formerly in effect. The term "award of priority" is intended to refer to those decisions of the Board of Patent Interferences, or Board of Patent Appeals and Interferences, awarding priority in interferences conducted under the former rules. The term "judgment" refers to judgments entered by the Board of Patent Appeals and Interferences in interferences conducted under the new rules.

Section 1.14, if amended as proposed, would delete reference to §1.139 since that section is proposed to be deleted.

Section 1.17 paragraph (h), if amended as proposed would include the petition fee required by proposed new §1.295.

Section 1.17, if amended as proposed, would also add new paragraphs (n) and (o) to establish fees for publication of statutory invention registrations. Paragraph (n) would provide a fee for publication of a statutory invention registration where no first examiner's action pursuant to §1.104 has been issued in the application. The fee for publication is proposed to be $400.00. The amount paid for basic filing fees under §1.16(a), (f) or (g) would be credited against this amount. For example, if a $300.00 filing fee was paid, only $100.00 additional would be required for publication of a statutory invention registration.

The proposed addition of paragraph (o) to §1.17 is similar to the addition of paragraph (n) but relates to publication of applications, which have received any examiner's action pursuant to §1.104, as a statutory invention registration. The substantially higher fee proposed in paragraph (o) is necessary in view of the expenditure of Office resources examining the application prior to the filing of the request for a statutory invention registration.

Section 1.19, if amended as proposed, would provide in paragraph (a)(1) a reference to the cost of a printed copy of a statutory invention registration and in paragraph (e) would provide reference to statutory invention registrations listed by subclass.

Section 1.20, if amended as proposed, would delete the requirement to pay maintenance fees in all plant patents in view of the amendment in Public Law 98-622. Paragraph 1.20(m), if amended as proposed, would provide that non-timely payment of maintenance fees may be accepted in patents based on applications filed prior to August 27, 1982, in accordance with Public Law 98-622.

Public Law 98-622 provides that no maintenance fees are charged for plant patents, regardless of when filed. Without this provision that no maintenance fees be charged for plant patents, plant patent owners whose applications were filed between the dates of enactment

of Public Law 96-517 and Public Law 97-247 (December 12, 1980 to August 27, 1982) would be subject to payment of maintenance fees, while plant patent owners whose applications were filed outside those dates would not be subject to such fees. Public Law 98-622 eliminates that inconsistency.

Section 1.45, if amended as proposed, would reflect the change made by Public Law 98-622 in 35 U.S.C. 116. The existing paragraph is proposed to be designated as paragraph (a). Proposed new paragraph (b) incorporates the wording added to 35 U.S.C. 116 by Public Law 98-622. Proposed new paragraph (c) would indicate that each named inventor listed in an application must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and that the application will be considered to be a joint application under 35 U.S.C. 116.

Section 1.48, if amended as proposed, would add a new paragraph (b) which would provide for deleting the names of persons originally properly included as inventors, but whose invention is no longer being claimed in the application. Such a situation would arise where claims have been amended or deleted because they are unpatentable or as a result of a requirement for restriction of the application to one invention, or for other reasons. Public Law 98-622 and proposed §1.48(b) change the result reached in Ex parte Lyon, 146 USPQ 222, 1965 Dec. Comm'r. Pat. 362 (Bd. App. 1964).

Section 1.60, if amended as proposed, would include wording which would permit an application to be filed under this section only if it were filed by "the same inventive entity", i.e., the same inventors, who filed and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98-622, which permit continuing applications to be filed by different inventors. Under §1.60 the same inventive entity is required since the oath or declaration from the prior application is relied upon.

Section 1.61 is proposed to be amended to incorporate the ability to file the translation, oath or declaration, and national fee after the 20 month deadline set forth in PCT Article 22(1) for entering the national phase in the United States Patent and Trademark Office.

Public Law 98-622 amended 35 U.S.C. 371(a) to provide greater flexibility for the PTO handling international applications. Also, 35 U.S.C. 371(a), by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, gives international applicants benefits similar to those given national applicants under 35 U.S.C. 111 by P.L. 97-247 with respect to the time for filing the national fee and oath or declaration.

Paragraph (b) of §1.61 is proposed to be amended to delete the 2 month time period to conform with the decision concerning PCT Article 22(2) adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on February 3, 1984. The amendment to the Article takes effect on January 1, 1985.

PCT Article 22(2) as amended, reads as follows:

> "Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be the same as that provided in paragraph (1)."

The proposed additional wording to paragraph (b) of §1.61 would set forth the ability to comply with the requirements for entering the national phase before the Patent and Trademark Office as a Designated Office within 22 months of the priority date. If the national fee or oath or declaration is submitted later than 20 months after the priority date, a surcharge as proposed in §1.445(a)(5) is required to be paid. If a required English translation of the international application is filed later than 20 months after the priority date, a processing fee as proposed in §1.445(a)(6) is required to be paid.

Proposed new paragraph (c) of §1.61 would provide that any amendments under PCT Article 19 which are not received along with any necessary English translation by the end of 20 months from the priority date will be considered as cancelled. This change is required in view of amended §371(d) of 35 U.S.C.

Paragraph (d) is proposed to be added to §1.61 in view of §372(b) of title 35, United States Code, as amended by Public Law 98-622, which authorizes the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases was necessary since subsection (c)(2) of 35 U.S.C. 371 was amended to remove the requirement that the translation be verified in all cases.

Section 1.62, if amended as proposed, would include wording which would permit an application to be filed under this section only if it were filed by the same inventive entity, i.e., the same inventors, who filed and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98-622, which permit continuing applications to be filed by different inventors. Under §1.62 the same inventive entity is required since the application file and the oath or declaration from the prior application are relied upon.

Section 1.78 is proposed to be amended to provide in paragraph (a) that the inventorship in the continuing application may be different from the inventorship in the prior copending application and that the prior application must disclose the invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. The requirement that at least one claim be fully supported in the prior application to be entitled to priority benefit is not new, but is included to serve as a reminder that information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the later application is available as prior art where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120. See In re Ruscetta, 255 F. 2d 687, 118 USPQ 101 (CCPA 1958); In re van Langenhoven, 458 F. 2d 132, 173 USPQ 426 (CCPA 1972), and Chromalloy American Corp. v. Alloy Surfaces Co., Inc., 339 F. Supp. 859, 173 USPQ 295 (D.Del. 1972).

Paragraph (c) as proposed to be amended would provide for the reply to an examiner's inquiry as to first inventor of conflicting claims in commonly owned applications or an application and a patent to be either (1) a statement that the inventions were both commonly owned

at the time of the invention of the application in which the request for information is being made or (2) an indication of the first inventor. Proposed new paragraph (d) provides for making a double patenting rejection where an application claims an invention which is not patentably distinct from an invention claimed in a commonly-owned patent with the same or different inventive entities. An obviousness-type double patenting rejection could be overcome by the assignee by submitting a terminal disclaimer complying with §1.321(b).

Section 1.101, if amended as proposed, would delete reference to applications filed under §1.139 since this section is proposed to be removed.

Section 1.103, if amended as proposed, would refer in paragraph (d) to a request "for a defensive publication" rather than a request "filed under §1.139" since §1.139 is proposed to be removed. Paragraph (d), if amended as proposed, would also refer to "patent interference proceedings under Subpart E" rather than to "proceedings under §1.201(b)" since §1.201(b) has been removed.

Section 1.104, if amended as proposed, would add a new paragraph (e) to specify the nature of the showing necessary before the examiner would consider co-pending applications to be owned by, or subject to an obligation of assignment to, the same person for purposes of 35 U.S.C. 102(f)/103, 102(g)/103, and proposed paragraph (d) of §1.106. The proposed rule would permit the necessary showing to be made in different alternative ways. The necessary showing would be considered by the examiner to be present if the application files refer to assignments which are recorded in the Patent and Trademark Office in accordance with §1.331 as long as the assignments conveyed the entire rights in the applications to the same person or organization. A second alternative which could be used under the proposed rule, if assignments have not been recorded, would permit the examiner to consider copies of unrecorded assignments filed in each of the applications by the applicants as long as the unrecorded assignments convey the entire rights in the applications to the same person or organization. A third alternative contained in the proposed rule would permit an affidavit or declaration to be filed by the common owner stating that there is common ownership and stating facts which explain why the affiant or declarant believes there is common ownership. Under this alternative, sufficient facts would have to be presented in order to enable the examiner to conclude that a prima facie case of common ownership exists. The fourth alternative contained in the proposed rule would permit other evidence to be used which would establish common ownership of the applications, e.g., a court decision determining the owner. The terms "person" and "organization" in the rule would include circumstances where the ownership resided in more than one person and/or organization as long as the applications are owned jointly by the same owners. Paragraph (e), if added as proposed, would also provide that where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization who is empowered to act on behalf of the corporation or organization. A mere power of attorney to prosecute a patent application would not make an individual an official of the corporation or organization or empower the individual to act on behalf of the corporation or organization.

The proposed wording of §1.106(d) amends the rule to reflect the change in 35 U.S.C. 103 and refers to the "entire" rights to the subject matter and the claimed invention to make it clear that the

term "commonly owned" means wholly owned by the same person, persons, or organization.

If the person, persons, or organization owned less than 100 percent of the subject matter which would otherwise be prior art to the claimed invention, or less than 100 percent of the claimed invention, then common ownership would not exist. Common ownership requires that the person, persons, or organization own 100 percent of the subject matter and 100 percent of the claimed invention. As long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership. The requirement for common ownership at the time the claimed invention was made is intended to preclude obtaining ownership of subject matter after the claimed invention was made in order to disqualify that subject matter as prior art against the claimed invention. The question of whether common ownership exists at the time the claimed invention was made is to be determined on the basis of the evidence presented and the facts of the particular case in question. Actual ownership of the subject matter and the claimed invention by the same individual or organization or a legal obligation to assign both the subject matter and the claimed invention to the same individual or organization must be in existence at the time the claimed invention was made in order for the subject matter to be disqualified as prior art. A moral or unenforceable obligation would not evidence common ownership.

The burden of establishing that subject matter is disqualified as prior art under the section is intended to be placed and reside upon the person or persons urging that the subject matter is disqualified. For example, the examiner would normally make what appears to be a proper 35 U.S.C. 102(f)/103 or 102(g)/103 rejection and the burden would be on the patent applicant to establish that subject matter is disqualified as prior art because it was commonly owned at the time the claimed invention was made. To place the burden upon the patent examiner would not be appropriate since evidence as to common ownership at the time the claimed invention was made might not be available to the patent examiner, but such evidence, if it exists, should be readily available to the patent applicant or the patentee.

Section 1.108, if amended as proposed, would delete the reference to filing a request under §1.139, which is proposed to be removed, and insert in its place a reference to a defensive publication.

A new section 1.110 is proposed to be added which would allow the examiner or other Office official to make inquiry as to the invention date, inventors and ownership at the time the invention was made when necessary for purposes of an Office proceeding.

Section 1.131 is proposed to be amended to require that affidavits to overcome a rejection of a claim on a cited patent or publication be by the inventor or inventors of the subject matter of that claim.

Section 1.193, if amended as proposed, would change from twenty days to one month the time for filing a reply brief in response to an examiner's answer which raises new points of argument. This amendment is intended to simplify the docketing of this time period and make it consistent with the time period fixed for requesting an oral hearing in §1.194(b).

Section 1.293, if added as proposed, would provide who may file a request for a statutory invention registration (SIR) and the requirements of such a request in accordance with 35 U.S.C. 157 added by Public Law 98-622. Paragraph (a) of proposed §1.293 would indicate that a request for publication of a statutory invention registration in a complete pending patent application for an original patent may be filed and be signed by the applicant, and any assignee of record, or the attorney or agent of record in the application. Proposed paragraph (b) would set forth the requirements for a request for a statutory invention registration. Such a request must include:

(1) a waiver of the applicant's right to receive a patent. This waiver would become effective upon the date of publication. Therefore, it would be possible to petition to withdraw a request for publication of a statutory invention registration until such time that publication could not be terminated;

(2) payment of the fee for publication of a statutory invention registration as set forth in proposed §1.17(n) or (o). The fee is proposed to be set at two levels to reflect the amount of resources used by the Patent and Trademark Office;

(3) a statement that the application meets the disclosure requirements of 35 U.S.C. 112. This provision is considered desirable in order to prevent publication of defective and insufficient disclosures; and

(4) a statement that the application complies with the formal requirements of the rules of practice relating to printing. This provision is required in order to provide the printer with drawings and specification which are suitable for printing in substantially the same format as a patent.

Paragraph (c) of §1.293, if added as proposed, would define the effects of a waiver filed with a request for a statutory invention registration. The waiver would be effective, upon publication of the SIR, to waive the inventor's right to receive a patent on the invention claimed in the SIR in any application for an original patent which is pending on, or filed after, the date of publication of the SIR. The waiver would affect pending or later applications the inventor filed as a joint inventor with others, but would not affect an application of another person, even if the application and the SIR were commonly owned. The waiver would affect a reissue application of an earlier patent of the inventor only to the extent that the reissue application sought to enlarge the scope of the claims.

Section 1.294, if added as proposed, would provide in paragraph (a) for a review of the request for publication of a statutory invention registration and the patent application to which it is directed. The request would be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 are met. Under 35 U.S.C. 157, the Commissioner is authorized to publish a statutory invention registration, but is not required to do so. Thus, the Commissioner has discretion in determining whether or not a statutory invention registration should be issued on a particular patent. In circumstances where the subject matter was obviously not a patentable invention, was too informal to print, and so

forth, the request to publish the statutory invention registration would be refused.

Paragraph (b) of proposed §1.294 provides for notifying applicant of the results of the examination of the request for publication of the statutory invention registration. Paragraph (c) of proposed §1.294 provides for the issuance of a notice of the intent to issue a statutory invention registration once the request has been examined and approved.

Section 1.295, if added as proposed, would provide for the review of a final refusal to publish a statutory invention registration. The review would be by petition to the Commissioner for matters other than those arising from a rejection pursuant to 35 U.S.C. 112 and by appeal for a rejection pursuant to 35 U.S.C. 112.

Section 1.296, if added as proposed, would provide that a request for a statutory invention registration which has been filed may be withdrawn only after filing and approval of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). Normally, it would be expected that an applicant wishing to withdraw a request for a SIR in order to prosecute the application would accompany the petition to withdraw the SIR by an express abandonment of that application and file a continuing application for purposes of examination.

Section 1.297, if added as proposed, would provide for the publication of the statutory invention registration and of the notice of its publication in the Official Gazette.

Sections 1.301, 1.302 and 1.304, if amended as proposed, would delete the requirement to give reasons for appeal when filing an appeal to the Court of Appeals for the Federal Circuit in accordance with §414(a) of Public Law 98-620 which amended 35 U.S.C. 142, 143 and 144.

Section 1.378, if amended as proposed, would delete from paragraph (a) the limitation that only applications filed on or after August 27, 1982 may have the maintenance fee accepted after expiration of the patent. This change follows the change made by §404(b) of Public Law 98-622.

Section 1.431 is proposed to be amended to provide for the later payment directly to the Receiving Office of the basic fee portion of the international fee and the transmittal and search fees within one month of the filing of an international application. The proposed rule follows §361(d) of title 35, U.S.C. as amended by Public Law 98-622, to provide a one-month grace period from the date of filing of an international application for the payment of the basic international fee and the transmittal and search fees.

It should be noted that the designation fees continue to be required by 12 months after the priority date and that no subsequent grace period is provided in the Receiving Office for designation fees.

Proposed new paragraphs 1.431(d) and (e) would incorporate into the regulations the provisions of PCT Rule 16 bis. Under these provisions the Receiving Office will charge any unpaid or insufficient fees to a deposit account maintained by the International Bureau. The applicant would then be notified by the International Bureau and be given one month to reimburse the amount charged plus a surcharge of 50%. The surcharge would not be less than 248 Swiss

francs or more than 624 Swiss francs under the current fee schedule.

Section 1.445, if amended as proposed, would clarify paragraph (a)(4) to clearly indicate that the national fee is credited by an amount of $250 only one time where a $500 search fee has been paid to the Patent and Trademark Office to act as an international searching authority. This is consistent with current practice. The special fee provisions in paragraph (a)(5) are proposed to be deleted in view of §402(g) of Public Law 98-622 which deleted the fee in 35 U.S.C. 376(a)(5). The proposed wording of §1.445(a)(5) would set forth the surcharge required for filing of a national fee or oath or declaration later than 20 months from the priority date. Paragraph (a)(6) of §1.445, if added as proposed, would require a fee of $20.00 for filing an English translation of an international application later than 20 months after the priority date. This would make the practice in international applications consistent with that in national applications where a fee of $20.00 is charged under §1.17(k) for processing an application filed with a specification in a non-English language.

Section 1.446, if amended as proposed, would clarify the refund of a portion of the $500 search fee toward payment of the national fee.

Section 1.451, if amended as proposed, would correct a rule citation in paragraph (b) and amend paragraph (c) to provide for supplying a copy of the priority document to the Receiving Office in conformance with revised PCT Rule 17.1.

Section 1.461 is proposed to be amended to delete provisions which relate to the applicant transmitting the record copy to the International Bureau. Provisions for such alternative transmittal are deleted from PCT Rule 22, effective January 1, 1985. Accordingly, since the PCT rules will no longer provide for such transmittal, the provisions therefor in the U.S. rules are also being proposed for deletion.

ENVIRONMENTAL, ENERGY, AND OTHER CONSIDERATIONS: The proposed rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). In fact, the proposed rule change will benefit small entities since the statutory invention registration procedures will provide a new, less expensive alternative to the traditional patenting of inventions in appropriate circumstances. Further, the ability to join multiple inventors in a single application in appropriate circumstances will be of particular benefit to small entities. Other changes, such as the elimination of the reasons for appeal, will also be beneficial to all inventors. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the

floor of the House in which the following statement appears (130 Cong. Rec. H1057 (1984), column 1):

> "Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new less expensive alternative to the traditional patenting of inventions."

These proposed rules, therefore, would have no significant adverse economic impact on small entities.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirement contained in these proposed rules has been submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 98-620 and 98-622, the Patent and Trademark Office is proposing to amend Title 37 of the Code of Federal Regulations as set forth below. All proposed additions are printed between arrows and all deletions are shown between brackets.

1. Section 1.11 is proposed to be amended by revising paragraphs (a) and (b) and adding new paragraph (e) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued ▶or a statutory invention registration has been published◀ , the specification, drawings and all papers relating to the case in the file of the patent ▶or statutory invention registration◀ are open to inspection by the [general] public, and copies may be obtained upon paying the fee therefor. [After entry of a judgement in an interference by the Board of Patent Appeals and Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies.] See §2.27 for trademark files.

(b) All reissue applications▶ ,◀[and] all applications in which the Office has accepted a request [filed under §1.139] ▶ to open the complete application to inspection by the public ◀ , and related papers in the application file, are open to

inspection by the [general] public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the Official Gazette. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

* * * * *

▶(e) The file of any interference which involved a patent, a statutory invention registration, or an application on which a patent has issued, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.◀

2. Section 1.14 is proposed to be amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application [which is open to inspection pursuant to §1.139]▶ in which the applicant has filed an authorization to open the complete application to the public ◀ , is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant.

* * * * *

3. Section 1.17 is proposed to be amended by revising paragraph (h) and by adding new paragraphs (n) and (o) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....$120.00

§1.47 - for filing by other than all the inventors or a person not the inventor

§1.48 - for correction of inventorship

§1.182 - for decision on questions not specifically provided for

§1.183 - to suspend the rules

▶§1.295 - for review of refusal to publish a statutory invention registration◀

§1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

§1.378(e)-for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent

§1.644(e)-for petition in an interference

§1.644(f)-for request for reconsideration of a decision on petition in an interference

§1.666(c)-for late filing of interference settlement agreement

§§5.12, 5.13, & 5.14 -for expedited handling of foreign filing license

§5.15 - for changing the scope of a license

§5.25 - for retroactive license

* * * * *

▶(n) For publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to §1.104.....$400.00 reduced by the amount of the application basic filing fee paid ◀

▶(o) For publication of a statutory invention registration after the mailing of the first examiner's action pursuant to §1.104.....$800.00 reduced by the amount of the application basic filing fee paid ◀

4. Section 1.19 is proposed to be amended by revising paragraphs (a) and (e) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, ▶ statutory invention registration, ◀ or defensive publication document, except color plant patent.....$ 1.00

* * *

* * * * *

(e) List of patents in subclass:

(1) For list of all United States patents ▶and statutory invention registrations◀ in a subclass, per 100 [patent] numbers or fraction thereof..... 2.00

(2) For list of United States patents ▶ and statutory invention registrations ◀ in a subclass limited by date or [patent] number, per 50 [patent] numbers or fraction thereof..... 2.00

5. Section 1.20 is proposed to be amended by revising paragraphs (e), (f), (g) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(e) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$200.00

(f) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant..... 400.00

(g) For maintaining an original or reissue patent, except a design ▶ or plant ◀ patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant..... 600.00

* * * * *

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee [on a patent based on an application filed on or after August 27, 1982,] where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable..... 500.00

6. Section 1.45 is proposed to be revised by labeling the existing paragraph as (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

▶(a)◀ * * * * *

▶ (b) Inventors may apply for a patent jointly even though

(i) they did not physically work together or at the same time,

(ii) each inventor did not make the same type or amount of contribution, or

(iii) each inventor did not make a contribution to the subject matter of every claim of the application.◀

▶(c) If multiple inventors are named in an application, each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116.◀

7. Section 1.48 is proposed to be amended by labeling the current paragraph as paragraph (a) and by adding a new paragraph (b) to read as follows:

§1.48 Correction of inventorship.

▶(a)◀ * * * * *

▶(b) If the correct inventors are named in the application when filed and the prosecution of the application results in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being claimed. The amendment must be diligently made and shall be accompanied by:

(1) a petition including a statement of facts verified by the originally named inventors establishing that the invention of the person or persons being deleted is no longer being claimed in the application,

(2) an oath or declaration by each actual inventor or inventors as required by §1.63,

(3) the fee set forth in §1.17(h), and

(4) the written consent of any assignee.◀

8. Section 1.60 is proposed to be revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), which discloses and claims only subject matter disclosed in a prior application▶ of the same inventive entity ◀ may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) [and]▶, ◀ (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the [applicant's] signature ▶ of the same inventive entity◀ or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application▶, and (3) the applicant in the continuation or divisional application is the same inventive entity as in the prior application ◀. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein.

Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

9. Section 1.61 is proposed to be amended by revising paragraphs (a) and (b) and adding paragraphs (c) and (d) to read as follows:

§1.61 Filing of applications in the United States of America [at] ▶as◀ a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) a copy of the international application with any amendments ▶under PCT Art. 19◀, unless it has been previously [furnished] ▶communicated◀ by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a [verified] translation of the international application and a translation of any amendments ▶under PCT Art. 19◀ into the English language, if originally filed [elsewhere] in another language; (3) the national fee (see §1.445(a)(4)); and (4) an oath or declaration of the inventor (see §1.70).

(b) [Where an International Searching Authority has made a declaration that no international search report will be established because the international application relates to subject matter which it is not required to search, or because the application fails to comply with the prescribed requirements to such an extent that a meaningful search could not be carried out, the time for performing the acts referred to in paragraph (a) of this section is 2 months from the mailing date of the declaration to the applicant.]▶ If the translation of the international application, oath or declaration, and national fee have not been submitted by the applicant within twenty (20) months from the priority date, such requirements may be met within twenty-two (22) months from the priority date. The payment of the surcharge set forth in §1.445(a)(5) is required as a condition for accepting the national fee or the oath or declaration later than 20 months after the priority date. The payment of the processing fee set forth in §1.445(a)(6) is required for acceptance of an English translation later than 20 months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of §1.136 do not apply to the 22 month period of this section.◀

▶(c) If a copy of the amendments under PCT Art. 19 is not communicated by the International Bureau or a copy thereof and any necessary English translation thereof is not received by the end of 20 months from the priority date, such failure will be regarded as cancellation of the amendments under PCT Art. 19 in the international application.◀

▶(d) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary,

if the international application or other document was filed in a language other than English.◀

10. Section 1.62 is proposed to be amended by revising paragraph (a) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) ▶ of the same inventive entity which is ◀ to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application.

* * * * *

11. Section 1.78 is proposed to be amended by revising paragraphs (a) and (c) and by adding a new paragraph (d) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in [the same applicant's]▶a◀ prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must ▶ name as an inventor at least one inventor named in the later filed application and disclose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must ◀ be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, ▶ and there is no statement of record indicating that the claimed inventions were commonly owned at the time the inventions were made, ◀ the assignee may be called upon to state▶whether the claimed inventions were commonly owned at the time the inventions were made, and if not, indicate◀which named inventor is the prior inventor. In addition to making said statement, the assignee may also

explain why an interference should ▶ or should not ◀ be declared [or that no conflict exists in fact].

▶(d) Where an application claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will be made in the application. An obviousness-type double patenting rejection may be obviated by filing a terminal disclaimer in accordance with §1.321(b).◀

12. Section 1.101 is proposed to be amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 [and those applications in which the Office has accepted a request for waiver of patent rights filed under §1.139]. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

13. Section 1.103 is proposed to be amended by revising paragraph (d) to read as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request [filed under §1.139] ▶to publish a defensive publication◀ will be suspended for the entire pendency of these applications except for purposes relating to ▶ patent interference◀ proceedings [under §1.201(b)]▶ under Subpart E◀ .

14. Section 1.104 is proposed to be amended by adding a new paragraph (e) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

▶(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with §1.331 which convey the entire rights in the applications to the same person or organization; or (2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or (3) an affidavit or declaration by the common owner is filed which states that there is commmon ownership

and states facts which explain why the affiant or declarant believes there is common ownership; or (4) other evidence is submitted which establishes common ownership of the applications. In circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.◀

15. Section 1.106 is proposed to be amended by adding a new paragraph (d) to read as follows:

§1.106 Rejection of claims.

* * * * *

▶(d) Subject matter which is developed by another person which qualifies as prior art only under 35 U.S.C. 102(f) or (g) may be used as prior art under 35 U.S.C. 103 against a claimed invention unless the entire rights to the subject matter and the claimed invention were commonly owned by the same person or organization or subject to assignment to a common owner at the time the claimed invention was made.◀

16. Section 1.108 is proposed to be revised to read as follows:

§1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have [become abandoned as a result of the filing and acceptance of a request under §1.139] ▶ been opened to inspection by the public following a defensive publication ◀ .

17. Section 1.110 is proposed to be added to read as follows:

▶§1.110 Inventorship and date of invention of the subject matter of individual claims.

When more than one inventor is named in an application or patent, the Patent and Trademark Office, when necessary for purposes of an Office proceeding, may require an applicant, patentee, or owner to identify the inventive entity of the subject matter of each claim in the application or patent. Where appropriate, the invention dates of the subject matter of each claim and the ownership of the subject matter on the date of invention may be required of the applicant, patentee or owner. See also §§1.78(c) and (d).◀

18. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the [applicant] ▶ inventor of the subject matter of the rejected claim ◀ or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign

patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the [applicant] ▶ inventor ◀ or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the [applicant's] ▶ inventor's ◀ or patent owner's application was filed in this country.

* * * * *

19. Section 1.193 is proposed to be amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within [twenty days] ▶ one month ◀ from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

* * * * *

20. A new section 1.293 is proposed to be added to read as follows:

▶ §1.293 Statutory invention registration.

(a) An applicant for an original patent may request, at any time during the pendency of applicant's pending complete application, that the specification and drawings be published as a statutory invention registration. Any such request must be signed by (1) the applicant and any assignee of record or (2) an attorney or agent of record in the application.

(b) Any request for publication of a statutory invention registration must include the following parts:

(1) a waiver of the applicant's right to receive a patent on the invention effective upon the date of publication of the statutory invention registration;

(2) the required fee for filing a request for publication of a statutory invention registration as provided for in §1.17(n) or (o);

(3) a statement that, in the opinion of the requester, the application to which the request is directed meets the requirements of 35 U.S.C. 112; and

(4) a statement that, in the opinion of the requester, the application to which the request is directed complies with the formal requirements of this part for printing as a patent.

(c) A waiver filed with a request for a statutory invention registration will be effective, upon publication of the statutory invention registration, to waive the inventor's right to receive a patent on the invention claimed in the statutory

invention registration, in any application for an original patent which is pending on, or filed after, the date of publication of the statutory invention registration. A waiver filed with a request for a statutory invention registration will not affect the rights of any other inventor even if the subject matter of the statutory invention registration and an application of another inventor are commonly owned. A waiver filed with a request for a statutory invention registration will not affect any rights in a patent to the inventor which issued prior to the date of publication of the statutory invention registration unless a reissue application is filed seeking to enlarge the scope of the claims of the patent.◀

21. A new section 1.294 is proposed to be added to read as follows:

▶§1.294 Examination of request for publication of a statutory invention registration and patent application to which the request is directed.

(a) Any request for a statutory invention registration will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 of this part are met.

(b) Applicant will be notified of the results of the examination set forth in paragraph (a) of this section. If the requirements of §1.293 and this section are not met by the request filed, the notification to applicant will set a period of time within which to comply with the requirements in order to avoid abandonment of the application. If the application does not meet the requirements of 35 U.S.C. 112, the notification to applicant will include a rejection under the appropriate provisions of 35 U.S.C. 112. The periods for response established pursuant to this section are subject to the extension of time provisions of §1.136. After response by the applicant, the application will again be considered for publication of a statutory invention registration. If the requirements of §1.293 and this section are not timely met, the refusal to publish will be made final. If the requirements of 35 U.S.C. 112 are not met, the rejection pursuant to 35 U.S.C. 112 will be made final.

(c) If the examination pursuant to this section results in approval of the request for a statutory invention registration the applicant will be notified of the intent to publish a statutory invention registration.◀

22. A new section 1.295 is proposed to be added to read as follows:

▶§1.295 Review of decision finally refusing to publish a statutory invention registration.

(a) Any requester who is dissatisfied with the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 may obtain review of the refusal to publish the statutory invention registration by filing a petition to the Commissioner accompanied by the fee set forth in §1.17(h) within one month or such other time as

is set in the decision refusing publication. Any such petition should comply with the requirements of §1.181(b).

(b) Any requester who is dissatisfied with the final rejection of claims pursuant to 35 U.S.C. 112 may obtain review of the final rejection by filing an appeal to the Board of Patent Appeals and Interferences pursuant to §1.191. If the rejection pursuant to 35 U.S.C. 112 is reversed, the request for a statutory invention registration will be approved and the registration published if all of the other provisions of §1.293 and this section are met.◀

23. A new section 1.296 is proposed to be added to read as follows:

▶§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn only after filing and approval of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).◀

24. A new section 1.297 is proposed to be added to read as follows:

▶§1.297 Publication of statutory invention registration.

(a) If the request for a statutory invention registration is approved the statutory invention registration will be published. The statutory invention registration will be mailed to the requester at the correspondence address as provided for in §1.33(a). A notice of the publication of each statutory invention registration will be published in the Official Gazette.

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration published pursuant to 35 U.S.C. 157 has all of the attributes specified for patents in title 35, United States Code, except those specified in 35 U.S.C. 183 and sections 271 through 289. A statutory invention registration does not have any of the attributes specified for patents in any other provision of law other than title 35, United States Code. The invention with respect to which a statutory invention registration is published is not a patented invention for purposes of the marking provisions of 35 U.S.C. 292.◀

25. Section 1.301 is proposed to be revised to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office [give notice]▶file a written notice of appeal directed◀ to the Commissioner [and file the reasons of appeal] (see §§1.302 and

1.304); ▶and◀ (b) in the [court] ▶Court◀, file a copy of the notice [and reasons] of appeal and pay the fee for appeal, as provided by the rules of the [court] ▶Court◀. The certified list ▶of documents and any original or certified copies of such documents◀ required by [the rules of] the Court will be transmitted to the Court by the Patent and Trademark Office.

26. Section 1.302 is proposed to be revised to read as follows:

§1.302 Notice [and reasons] of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner[, and file in the Patent and Trademark Office] within the time specified in §1.304[, his or her reasons of appeal specifically set forth in writing].

(b) In interferences, the notice [and reasons] must be served as provided in §1.646.

27. Section 1.304 is proposed to be amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice [and reasons] of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

28. Section 1.378 is proposed to be amended by revising the title and paragraph (a) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent [based on application filed on or after August 27, 1982].

(a) The Commissioner may accept the payment of any maintenance fee due on a patent [based on an application filed on or after August 27, 1982,] after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as

a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

* * * * *

29. Section 1.431 is proposed to be amended by revising paragraphs (b)(3)(iii) and (c) and by adding new paragraphs (d) and (e) to read as follows:

§1.431 International application requirements.

* * * * *

(b)(3) * * *

(iii) The name of the applicant, as prescribed (note §[1.422] ▶ §1.421-1.424◀);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§1.445) [shall]▶ may ◀ be made in full at the time the international application papers required by paragraph (b) of this section are deposited ▶ or within one month thereafter◀ . Failure to make full payment [on the same date as] ▶ within one month of◀ the deposit of the international application papers required by [sub]paragraph (b) of this section will result in the [international application being considered withdrawn (PCT Art. 14(3)(a))] ▶ fees being charged to the International Bureau under the provisions of paragraph (d) of this section and PCT Rule 16 bis◀ .

▶(d) The United States Receiving Office will charge to the International Bureau in accordance with PCT Rule 16 bis and will consider as having been timely paid:

(i) the transmittal fee, the basic fee portion of the international fee, or the search fee where these fees have not been fully paid by the applicant within one month of the date of deposit of the international application, and

(ii) the designation fee, or the amount necessary to cover all the designations made in the request which have not been paid by the applicant within one year from the priority date.◀

▶(e) The International Bureau will notify applicant of any amount charged under paragraph (d) of this section and invite the applicant to pay directly to the International Bureau within one month from the date of the notification, the amount charged, augmented by a surcharge of 50%, provided the surcharge will not be less, and will not be more, than the amounts indicated in the Schedule of Fees appended to the PCT Rules. If the payment needed to cover the transmittal fees, the basic fee, the search fee, one designation fee and the surcharge is not timely made to the International Bureau, the International Bureau will notify the Receiving Office which will declare the international application withdrawn under PCT Article 14(3)(a). If the applicant makes timely payment of the fees referred to in the previous sentence, but the amount paid is not sufficient to cover all the designation fees, the

Receiving Office will declare any designations not paid withdrawn under PCT Article 14(3)(b) in accordance with PCT Rule 16 bis. 2(c).◀

30. Section 1.445 is proposed to be amended by revising paragraphs (a)(4) and (5) and adding paragraph (a)(6) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited ▶ one time only◀ by an amount of $250 where an international search fee ▶of $500.00 ◀ has been paid on the corresponding international application to the United States ▶ Patent and Trademark Office ◀ as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single ▶ $500.00◀ international search fee.

(5) [A special fee when required (see 35 U.S.C. 372(c)--$10 per claim.] ▶ Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date---$100.00.◀

▶(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b))----$20.00◀

* * * * *

31. Section 1.446 is proposed to be amended by revising the title and paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee ▶ toward payment of the national fee◀ may be made ▶ one time ◀ to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee ▶ provided that a $500 search fee has been paid◀.

* * * * *

32. Section 1.451 is proposed to be amended by revising paragraphs (b) and (c) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office ▶ or in a separate letter filed in the Receiving Office not later than 16 months after the

priority date ◀, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)▶ (3)◀ [(4)] and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing▶or are not filed within 16 months of the priority date ◀, the certified copy of the priority document must be [transmitted directly] ▶furnished◀ by the applicant to the International Bureau ▶ or to the United States Receiving Office◀within the time limit specified in PCT Rule 17.1(a).

33. Section 1.461 is proposed to be amended by deleting paragraph (b) and by revising paragraph (a) to read as follows:

§1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made[, at the option of the applicant, either] by the United States Receiving Office [or by the applicant]. [Subject to paragraph (b) of this section, any applicant who chooses to make such transmittal personally shall notify the United States Receiving Office to that effect in writing, by way of a notice filed together with the international application. Such notice shall also state whether the applicant wishes to collect the record copy at the United States Receiving Office or to have the record copy mailed directly to him. The record copy of an international application which was filed without being accompanied by such notice will be transmitted to the International Bureau by the United States Receiving Office (PCT Rule 22).]

(b) [An applicant may transmit the record copy to the International Bureau as provided in PCT Rule 22.2 only if the international application is filed with the United States Receiving Office before the expiration of 11 months from the priority date.]▶(reserved)◀

* * * * *

DEC 18 1984

Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Jan. 22, 1985

Re. 31,361	4,419,681	4,447,426	4,459,480
Re. 31,619	4,421,402	4,447,823	4,459,538
D. 275,099	4,421,880	4,448,356	4,459,788
4,024,575	4,422,035	4,448,689	4,461,074
4,131,903	4,430,247	4,448,839	4,461,873
4,169,543	4,430,344	4,450,484	4,462,088
4,217,374	4,430,395	4,451,906	4,462,240
4,226,898	4,430,889	4,453,119	4,462,932
4,235,023	4,431,581	4,453,216	4,463,871
4,374,953	4,431,937	4,453,951	4,464,085
4,375,770	4,436,742	4,454,038	4,465,573
4,384,899	4,439,311	4,454,488	4,465,961
4,384,989	4,439,337	4,456,373	4,467,566
4,396,997	4,439,505	4,457,106	4,469,366
4,404,460	4,440,362	4,457,557	4,469,426
4,405,380	4,440,503	4,457,935	4,469,748
4,405,911	4,443,297	4,458,061	4,469,867
4,407,290	4,444,147	4,458,404	4,471,122
4,414,431	4,446,170	4,458,706	
4,418,165	4,446,577	4,459,279	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
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	Columbus: Ohio State University Libraries	(614) 422-6286
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 22, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-11-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-06-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-18-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-23-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-1-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	9-02-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive

Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REISSUES

JANUARY 22, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

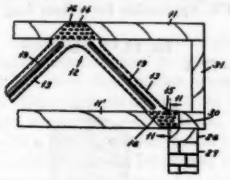
Re. 31,807
TRUSS-WEB CONNECTOR

James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Original No. 4,078,352, dated Mar. 14, 1978, Ser. No. 727,906, Sep. 30, 1976. Continuation-in-part of Ser. No. 576,031, May 9, 1975, Pat. No. 4,002,116. Application for reissue Mar. 13, 1980, Ser. No. 130,032

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—693 22 Claims



1. In a sheet metal truss web-connector for interconnecting a pair of parallel, horizontally arranged, wooden elongated chord members of roughly rectangular cross-section, i.e., having coplanar opposite side faces and upper and lower faces, for thereby forming a truss-like joist, the improvement comprising:

said connector web being formed of substantially flat, rigid, sheet metal formed in a V-shape to provide a flat apex portion and two elongated diverging legs with enlarged end portions, all in substantially the same plane;

each leg of said connector web including a central integral, bent, narrow rib formed along the center of thereof and extending substantially the full length thereof, each rib being approximately V-shaped in cross-section with its apex displaced from said plane in a first direction and being substantially aligned with the central axis of its respective leg;

each enlarged end extending outwardly at its outer edge in a direction transverse of the central axis of its corresponding leg;

a plurality of pointed fastening teeth struck out and extending normal to each of said apex and end portions for embedding into coplanar sides of said chord members so that the connector web may be applied against and is located only along a side of chord members, i.e., in a generally vertical plane, and being otherwise free of securement to the inner and outer faces of the chord member;

the opposite edges of each of said legs being formed with roughly parallel, integral, continuous, narrow edge flanges extending substantially the full lengths thereof and extending in a direction opposite to said first direction, and

the inner edge flange of each leg extending in a substantially straight line to form the interior edge of its respective enlarged end.

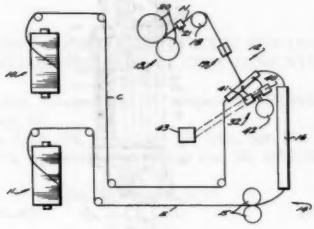
Re. 31,808
NOVELTY YARN PRODUCTION

Joe F. London, Jr., Greensboro, and Charles D. Pugh, Raleigh, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Original No. 4,311,000, dated Jan. 19, 1982, Ser. No. 71,027, Aug. 29, 1979. Application for reissue Feb. 4, 1983, Ser. No. 464,045

Int. Cl.³ D02G *1/16, 3/36*

U.S. Cl. 57—6 12 Claims



1. A jet for producing novelty yarn comprising

a body member;

a first yarn port in said body member for the introduction of a core yarn;

a second yarn port in said body member for the introduction of an effect yarn, said second yarn port being substantially in-line with said first yarn port, a common passageway being provided;

a third yarn port in said body member for the passage of a combined yarn comprising the combined effect and core yarns, said third yarn [being substantially transverse to] *port intersecting* said common passageway, all of said yarn ports being in operative communication in said common passageway within said body member;

a first fluid introduction port formed in said body member and in operative communication with said second yarn port;

a second fluid introduction port formed in said body member and in operative communication with at least one of said yarn posts; and

valve means for controlling the supply of fluid to said first and second fluid introduction ports to cause fluid to be introduced thereinto to produce a novelty yarn by acting upon at least said effect yarn.

Re. 31,809
EXTERNAL AXIAL FIXATION UNIT

Giuseppina Danieletto; Giovanni De Bastiani, both of Verona; Giovanni Faccioli, Monzambano; Lodovico R. Brivio, Castenedola; Roberto Aldegheri, San Giovanni Lupatoto, and Andrea Cavazzana, Verona, all of Italy, assignors to Orthofix S.r.l., Verona, Italy

Original No. 4,312,336, dated Jan. 26, 1982, Ser. No. 93,897, Nov. 13, 1979. Application for reissue Apr. 6, 1983, Ser. No. 482,586

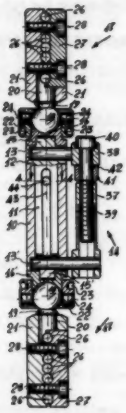
Claims priority, application Italy, Nov. 10, 1978, 84949 A/78; Apr. 5, 1979, 84930 A/79

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 A 22 Claims

1. [Apparatus for the external setting or securing of the parts of a fractured bone, said apparatus comprising] *Orthopedic apparatus, comprising* an elongate central body member

which is comprised of two *telescopically related* parts adapted to be mutually displaceable parallel to the longitudinal axis of said member and rotatably fixed at all times with respect to each other, [whereby] each part of said central body member [supports] *supporting* a clamping device for pins adapted to be inserted into a part of the bone, further including a pressing and tensioning device in engagement with both said two parts of said central body member, [wherein said two parts of said central body member are telescopically inserted one within the other, wherein] each of said clamping devices [is] *being* mounted on a respective one of said parts of said central body



member through a respective ball joint having a center of rotation which substantially lies on the longitudinal axis of said central body member, and securing devices for fixing the mutual rotative position of said parts of said central body member when said two parts of said central body member are being mutually longitudinally displaced and for fixing both the mutual rotative and longitudinal positions of said parts of said central body member after said mutual longitudinal displacement, [wherein] said pressing and tensioning device [is] *being* removably connected to the parts of the central body member, and wherein said pins, at least in the section insertable in the bone, [have] *having* an external thread.

Re. 31,810

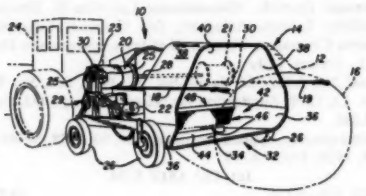
AGRICULTURAL BAG LOADING APPARATUS BRAKING MECHANISM

Richard H. Lee, Astoria, Oreg., assignor to Ag-Bag Corporation, Astoria, Oreg.

Original No. 4,308,901, dated Jan. 5, 1982, Ser. No. 115,440, Jan. 25, 1980. Application for reissue Dec. 13, 1982, Ser. No. 449,151

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—114 **18 Claims**



16. An improved brake mechanism for deploying an attachment means between the filled end of an agricultural bag and an agricultural bag loading apparatus in response to the loading of material into said agricultural bag, said improvement comprising:

drum means rotatably mounted on said loading apparatus, said drum means deploying the attachment means upon rotation of said drum means in one direction, wherein said attachment means includes a cable wrapped around said drum means in a single layer to prevent excessive wear of said cable;

a first brake portion forming one end of said drum means;

a second brake portion attached to said loading apparatus; and

actuation means causing said second brake portion to resist motion between said second brake portion and said first brake portion.

Re. 31,811

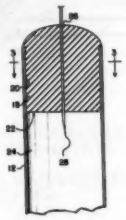
BASEBALL BAT WITH MODIFIED INTERNAL AIR PRESSURE

Ronald Foreman, 315 Hidden River Rd., Narberth, Pa. 19072

Original No. 4,241,919, dated Dec. 30, 1980, Ser. No. 973,039, Dec. 26, 1978. Application for reissue Aug. 10, 1981, Ser. No. 291,563

Int. Cl.³ A63B *59/06*

U.S. Cl. 273—72 A **12 Claims**



6. In a metallic bat construction of the type comprising sidewalls and closed first and second ends defining an interior space and capable of maintaining a quantity of confined gas therewithin, the improvement comprising

gas passage means in the bat construction in fluid communication with the interior space to pass gas therethrough,

the confined gas being characterized by a pressure that is other than atmospheric, and

the said pressure being appropriate to produce a natural frequency of free vibration of such frequency and amplitude in the bat that when coupled with the excitation frequency caused by the impact of the bat striking a ball, resonance results.

Re. 31,812

CATALYTIC HYDROFORMYLATION OF OLEFINS

Emile Kuntz, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

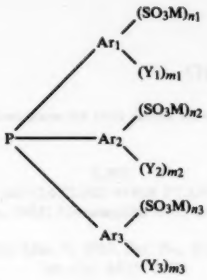
Original No. 4,248,802, dated Feb. 3, 1981, Ser. No. 696,909, Jun. 17, 1976. Application for reissue Jun. 29, 1982, Ser. No. 393,439

Claims priority, application France, Jun. 20, 1975, 75 19407; Apr. 29, 1976, 76 12672

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **37 Claims**

1. In a process for the hydroformylation of [linear or branched chain ethylenically unsaturated aliphatic olefins having from 2 to 20 carbon atoms to their corresponding aldehydes] *an olefin to its corresponding aldehyde,* in liquid phase, comprising reacting an olefin with carbon monoxide and hydrogen, the improvement which comprises conducting the hydroformylation reaction in the presence of an aqueous solution of at least one water-soluble phosphine having the following structural formula:



(I)

in which:

Ar_1, Ar_2 and Ar_3, which may be identical or different, represent carbocyclic aryl groups having from 6 to 10 carbon atoms,

Y_1, Y_2 and Y_3, which may be identical or different, each represents a radical selected from the group consisting of linear or branched chain alkyl radicals having from 1 to 4 carbon atoms, alkoxy radicals having from 1 to 4 carbon atoms, halogen atoms, the —OH radical, the —C≡N radical, the $—NO_2$ radical, and the radical of the formula $—NR_1R_2$, in which R_1 and R_2, which may be identical or different, represent a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

M is an inorganic or organic cationic radical selected from the group consisting of the cations derived from the alkali metals, the alkaline earth metals, lead, zine and copper, NH_4^+, and $N(R_3R_4R_5R_6)^+$ wherein R_3, R_4, R_5 and R_6, which may be identical or different, each represents a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

m_1, m_2 and m_3 are identical or different integers between 0 and 5 and

n_1, n_2 and n_3 are identical or different integers between 0 and 3, at least one of the numbers n_1, n_2 or n_3 being greater than or equal to 1,

said aqueous solution of the sulfonated aryl phosphate additionally comprising a member selected from the group consisting of metallic rhodium and a rhodium containing compound.

Re. 31,813

PRINT WIRE SOLENOID

Philip E. Fugate, Dayton, and Kenneth L. Roy, Centerville, both of Ohio, assignors to Ledex, Inc., Vandalia, Ohio

Original No. 4,272,748, dated Jun. 9, 1981, Ser. No. 116,718, Jan. 30, 1980. Continuation-in-part of Ser. No. 908,153, May 22, 1978, Pat. No. 4,200,401. Application for reissue Jun. 8, 1983, Ser. No. 502,377

Int. Cl.³ H01F *7/08*

U.S. Cl. 335—271 **3 Claims**

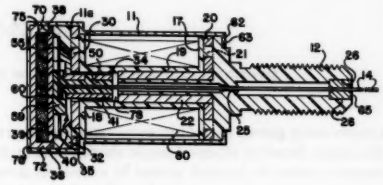
1. In a high speed axial type solenoid suitable for use as a printing solenoid and the like, having an axially movable armature therein, the improvement comprising:

means in said solenoid defining a datum plane,

solenoid armature impact plate [means] *formed of relatively incompressible material* positioned at said plane and defining a rest position for the armature,

a *fixed* solenoid wall,

means defining a *single* quantity of energy absorbing elastomeric material positioned between said wall and said plate [means], *with one surface thereof in contact with said wall and an opposite surface in contact with said plate,* and



means at said datum plane engaging said plate [means] and normally retraining said material in precompression.

Re. 31,814

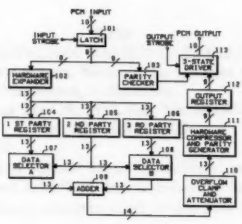
THREE-PARTY CONFERENCE CIRCUIT FOR DIGITAL TIME-DIVISION-MULTIPLEX COMMUNICATION SYSTEMS

Barry D. Lubin, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Original No. 4,301,531, dated Nov. 17, 1981, Ser. No. 54,391, Jul. 2, 1979. Application for reissue Jun. 28, 1982, Ser. No. 392,976

Int. Cl.³ H04M *3/56*

U.S. Cl. 370—62 **24 Claims**



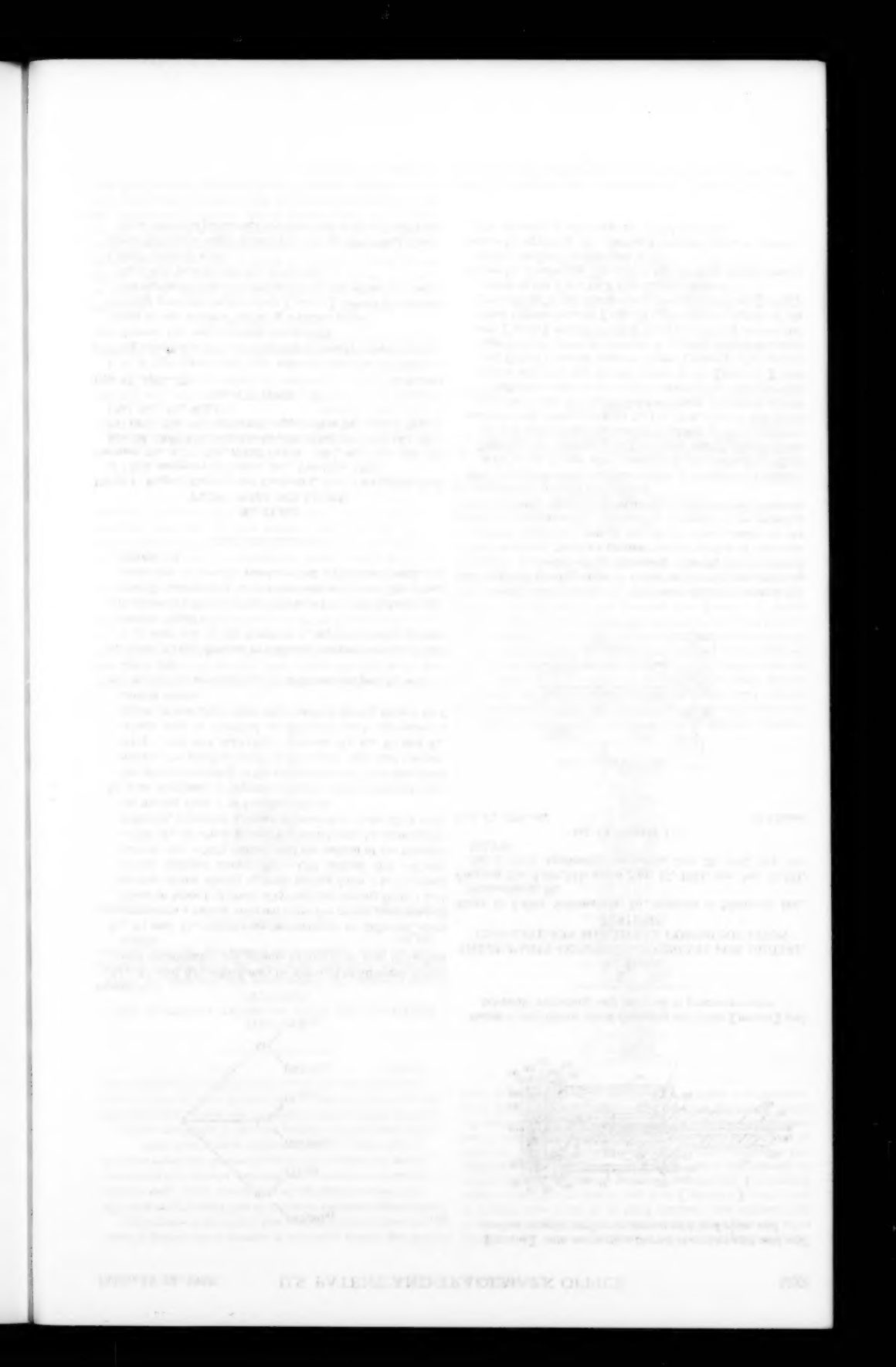
1. A conference circuit for combining digitized speech signals received from groups of three parties in corresponding *consecutive* channels of an incoming time-division-multiplex (TDM) highway, having a predetermined number of channels, to provide combined speech signals for transmission to the parties in corresponding *consecutive* channels of an outgoing TDM highway, having a predetermined number of channels, said conference circuit comprising:

first, second and third register means [repetitively] *sequentially* coupled one after another to the incoming TDM highway for storing [the] *different* speech signals from [every third channel] *successive groups of three channels;*

multiplexing means coupled to the first, second and third register means for *sequentially* selecting *the speech signals in* different pairs of the register means, said multiplexing means selecting the *speech signals in the* [second] *first* and [third] *second* register means [when] *after* speech signals *of the first two channels in a group of three channels* are [being] stored in the [first] *the* [first] *second* and third register means [when] *after* speech signals *of the first channel in the next group of three channels* are [being] stored in the [second] *first* register means;

means for combining the speech signals from each selected pair of register means; and

means for applying the combined speech signals to *consecutive channels of* the outgoing TDM highway.



PLANT PATENTS

GRANTED JANUARY 22, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,392
MINIATURE ROSE PLANT

Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643

Filed Mar. 9, 1983, Ser. No. 473,581
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant, hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are in a color hue similar to Thanksgiving (Hybrid Tea—Rose—U.S. Plant Pat. No. 2,524 — expired) and giving a coloring effect of Mars orange flowers with buds being of Mars orange tinted brown and resembling Sheri Anne (Miniature Rose—U.S. Plant Pat. No. 3,826) in form and size, having buds and flowers of a distinct and unusual appearance as compared to other miniature rose plants; said flowers being fully double, having unique cupped form; and further characterized by its vigor, abundant foliage and ease of propagation from softwood cuttings and by budding, and with an abundance of flowers.

5,393
BOUGAINVILLEA PLANT

Jake W. Rice, and Patricia A. Rice, both of Box 133, Sutherland Springs, Tex. 78161

Filed Jan. 7, 1983, Ser. No. 456,440
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Bougainvillea plant, substantially as herein shown and described, characterized particularly as to novelty by its variegated leaves having green centers and cream colored outside edges, lavender throated cream-colored blooms, denseness of leaves, fineness of stems, compact growth, and cascading branches.

5,394
CARNATION NAMED ODEON

J. F. Sarneel, Nieuwveen, Netherlands, assignor to M. Lek en Zonen, B.V., Nieuwveen, Netherlands

Filed Jun. 29, 1983, Ser. No. 508,864
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct carnation cultivar, substantially as herein shown and described, charcterized by its year round production of generally orange colored, medium sized blossoms, and by its continuous profuse production of blooms substantially the year round.

5,395
CARNATION NAMED CAPPELLO

J. F. Sarneel, Nieuwveen, Netherlands, assignor to M. Lek en Zonen, B.V., Nieuwveen, Netherlands

Filed Jun. 29, 1983, Ser. No. 508,865
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—72 **1 Claim**

1. The new and distinct carnation cultivar, substantially as herein shown and described, characterized by its profuse year round production of medium sized, bright pink blossoms.

PATENTS

GRANTED JAN. 22, 1985

ERRATA

For CLASS	See PATENT NO.
038–102	4,494,344
137–414	4,494,345
383–005	4,494,592
272–134	4,494,662
139–435	4,494,888
534–651	4,495,098
534–651	4,495,099
534–651	4,495,100
427–384	4,495,156
524–507	4,495,159
514–017	4,495,178
514–009	4,495,179
514–046	4,495,180
514–167	4,495,181
514–226	4,495,182
514–220	4,495,183
514–238	4,495,184
514–242	4,495,185
514–255	4,495,186
514–250	4,495,187
514–260	4,495,188
514 -258	4,495,189
514–262	4,495,190
514–383	4,495,191
514–318	4,495,192
514–385	4,495,193
514–323	4,495,194
514–406	4,495,195
514–427	4,495,196
514–210	4,495,197
514–456	4,495,198
514–467	4,495,199
514–560	4,495,201
514–721	4,495,202
514–732	4,495,203
429–105	4,495,266
252–088	4,495,336
364–424	4,495,457
382–001	4,495,642

PATENTS

GRANTED JANUARY 22, 1985

GENERAL AND MECHANICAL

4,494,245
TECHNIQUES FOR REPELLING PREDATORY ANIMALS BY THE USE OF APOSEMATIC PATTERNS AND COLORATION
Noel M. Burkhead, Rte. 3, Box 272, Salem, Va. 24153, and Paul J. Weldon, 4513 Hillview Rd., Knoxville, Tenn. 37916
Filed Sep. 20, 1982, Ser. No. 419,979
Int. Cl.³ A41D *13/00*; A42B *3/00*; A01M *00/00*
U.S. Cl. 2—2 **11 Claims**

1. A method of passively repelling a predatory organism from a target organism by the use of aposematic patterns and coloration comprising the steps of:

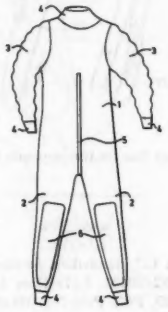
determining a coloration pattern having at least two distinct colors and which elicits an avoidance response in a selected species of predatory organisms; and

applying the determined coloration pattern to selected items adjacent the target organism.

9. Water apparel for passively repelling predatory sharks from a person comprising a garment having applied thereto aposematic patterns and coloration patterns having at least two distinct colors and which elicit an avoidance response in sharks.

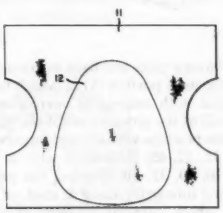
4,494,246
PROTECTIVE CLOTHING
Anthony A. C. Tillbrook, Hillair, Coopersale La., Theydon Garnon, Epping, Essex, England
Filed May 24, 1982, Ser. No. 381,558
Claims priority, application United Kingdom, May 27, 1981, 8116186; Sep. 9, 1981, 8127200; Dec. 7, 1981, 8136787
Int. Cl.³ A62B *17/00*; B63C *11/04*
U.S. Cl. 2—2.1 R **6 Claims**

1. In a dry suit for use in aquatic sports, the suit being of the type comprising a one piece garment to cover the legs, arms and body of a user and having leg portions, a body portion, and arm portions, said suit being sealed against entry of water, the leg portions and at least the lower part of the body portion being made of a flexible, expanded rubber or rubber-like material arranged to fit closely to the user's legs and body; wherein the improvement comprises the arm portions being made of a



thin and flexible waterproof fabric different from the said flexible expanded material and adapted to be loose fitting.

4,494,247
KNEE/ELBOW GUARD TREATED TO INCREASE DURABILITY AND A PROCESS FOR PRODUCING SAME
Michael J. Kelly, Seattle, Wash., assignor to Trace Athletic Corporation, Bellevue, Wash.
Filed Dec. 28, 1981, Ser. No. 334,872
Int. Cl.³ A41D *13/06*
U.S. Cl. 2—24 **6 Claims**



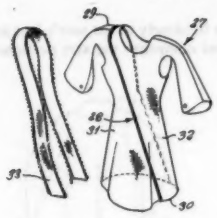
1. A protective article with enhanced durability for use on a human limb, comprising:

a protective guard element which includes an outer fabric section, wherein a selected portion of the fabric section is treated with a protective material in such a manner that a thin film of said protective material is fixed to the selected portion of the fabric section, the protective material having a coefficient of friction which is substantially lower than that of conventional fabrics used for the fabric section, such as nylon.

4,494,248
FABU PATIENT GOWN
Percy E. A. Holder, 188 Veronica Pl., Brooklyn, N.Y. 11226
Filed Jul. 22, 1982, Ser. No. 379,183
Int. Cl.³ A41B *1/12*
U.S. Cl. 2—69 **3 Claims**

1. A divided garment, comprising in combination a plurality of panels detachably attached together by fastener means along mating edges of said panels and an insert panel selectively inserted at said fastener means for enlarging said garment,

wherein one of said plurality of panels comprises a single diagonal panel, which divides said garment diagonal from one

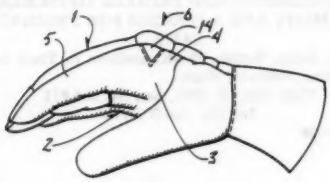


shoulder to the hem line on the opposite side of said shoulder as needed.

4,494,249
GLOVE

Erik Hansson, Box 137, Sandviken, Sweden S-811 23

PCT No. PCT/SE82/00441, § 371 Date Aug. 3, 1983, § 102(e) Date Aug. 3, 1983, PCT Pub. No. WO83/02217, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 29, 1982, Ser. No. 519,919
Claims priority, application Sweden, Dec. 30, 1981, 8107841
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 R **10 Claims**



1. A glove having palm and back portions joined at opposite lateral sides, the back portion (**1**) of which has at least one part that is extended with respect to corresponding parts of the palm portion (**2**) of the glove to adapt the glove to the form of a hand in its rest position with curved fingers, material portions (**4, 5; 25, 26; 32, 33, 45**) associated with at least one material piece (**3; 19, 20; 30, 31, 40**) forming the palm portion of the glove projecting upwardly along at least one side of the glove in an area, in which joints of the hand are intended to be located, characterized in that the upwardly projecting material portions (**4, 5; 25, 26; 32, 33, 45**) in the vicinity of said joint area is incised and assembled with respect to the rest of the glove so as to form at said incision (**13, 15, 16; 21; 46**) a local curvature in the palm portion in the stress-free condition of the glove.

4,494,250
MODIFIED ANGLE, BIAS CROTCH, FRONT POCKET PANTS

Mark T. Sheppard, and Lynda J. Timbers, both of 105 E St., Roseville, Calif. 95678

Filed Jun. 6, 1983, Ser. No. 501,604
Int. Cl.³ A41D *1/06*
U.S. Cl. 2—227 **13 Claims**

1. In a garment formed from a plurality of flexible interconnected planar panels comprising:

a first panel being generally rectangular having a cut out section on the upper right corner thereof;

a second panel being a mirror image of said first panel, said first and second panels when interconnected forming the rear of said garment;

a third flexible panel comprising a first generally rectangular portion having a cut out section at the upper corner thereof, an elongated tapered section extending downwardly from the right side of said first rectangular portion integral therewith, the outer edge of said tapered section extending downwardly inwardly toward the central longtitudinal axis of said third panel, a second generally rectangular portion extending downwardly from the left side of said first rectangular portion integral therewith, the lower edge of said second rectangular portion terminating at a point above the lower edge of said tapered section, said second rectangular portion being spaced from said tapered section and separated therefrom;

a fourth panel in a mirror image of said third panel;

a fifth panel being generally rectangular having a cut out section at the upper right corner thereof, said third and fifth panels when interconnected forming the front left portion of said garment; and

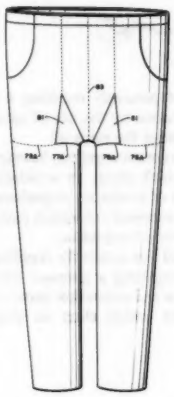
a sixth panel being a mirror image of said fifth panel, said fourth and sixth panels when interconnected forming the front right portion of said garment, with said front left portion and said front right portion, when interconnected, forming the front of said garment.

13. A method for forming a garment from flexible material including the steps of:

cutting a first rectangular panel from said material and cutting a section out of the upper right corner thereof;

cutting a mirror image of said first panel from said material;

cutting a third rectangular panel from said material;



cutting a section out of the upper left corner of said third panel;

cutting a tapered elongated section on the bottom right portion of said third panel and a rectangular portion on the lower left spaced from the tapered section;

cutting a fourth panel that is a mirror image of said third panel from said material;

cutting a fifth rectangular panel from said material and cutting a section out of the upper right corner thereof;

cutting a sixth panel from said material that is a mirror image of said fifth panel;

sewing together the upper top edges of said third and fifth panels with said third panel overlying said fifth panel and exposing the upper left corner of said fifth panel;

sewing the left vertical edges together of the third and fifth panels;

sewing the bottom horizontal edge of said third panel to the left bottom horizontal edge of the fifth panel;

sewing the right vertical edge of the third panel to a point along generally the vertical longitudinal axis of said fifth panel;

sewing the left vertical edge of the tapered section of the third panel to the outer edge of the cut out section of the fifth panel;

sewing the fourth and sixth panels in like manner as said aforementioned third and fifth panels thereby forming the front portion of the garment;

sewing the right vertical edge of the first panel to the left vertical edge of the second panel; and

sewing the first panel to one of the outer vertical edges of the front portion of the garment and the second panel to the other outer vertical edge of the front portion.

4,494,251

EYE PROTECTOR

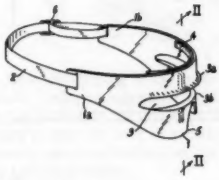
Leslie Ainsworth, Flat 2, 2, King's Gardens, Hove, Sussex BN3 2PE, and Harold Ainsworth, Radbrook Hall Hotel, Radbrook Rd., Shrewsbury, Shropshire, SY3 9BR, both of England

Filed Apr. 30, 1982, Ser. No. 374,595

Claims priority, application United Kingdom, Apr. 30, 1981, 8113353; Oct. 8, 1981, 8130444

Int. Cl.³ A61F *9/02*

U.S. Cl. 2—425 **4 Claims**



1. A squash player's eye protector comprising a slitted screen of transparent plastics material and means to support the screen across the face of a squash player to overlie the eye region of a player's face, said screen being formed with a first rigid thickened region on the outwardly facing surface of the screen defining the upper extremity of the salt and a second rigid thickened region on the outwardly facing surface of the screen defining the lower extremity of the slit, said first and second thickened regions being spaced apart at widest part of said slit by a distance which is at least 20 mm but which is less than the diameter of a squash ball, and the first thickened region defining the upper extremity of the slit projects forwardly further than the second thickened region.

4,494,252

LARYNGEAL PROSTHESIS

Samir M. Chaoui, Placentia, Calif., assignor to Bear Medical Systems, Inc., Riverside, Calif.

Filed Aug. 22, 1983, Ser. No. 525,306

Int. Cl.³ A61F *1/20*

U.S. Cl. 3—1.3 **27 Claims**

1. A laryngeal prosthesis for a tracheostomized patient having a surgically-formed pseudoglottis between the trachea and the hypopharynx, said prosthesis comprising:

a housing;

a fitting adapted for sealingly attaching said housing to the exterior of the tracheostoma formed in said patient's neck;

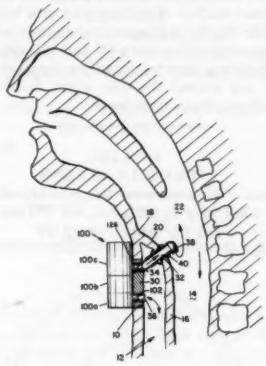
first passage means adapted for communicating between said housing and the trachea through said fitting;

inhalation valving means in said housing for permitting the flow of air from outside said housing in said housing and through said first passage means;

second passage means adapted for communicating between said housing and the hypopharynx of said patient;

exhalation valving means in said housing for permitting the flow of exhaled air received from said first passage means toward said second passage means;

first pressure-responsive means in said housing downstream from said exhalation valving means and upstream from said second passage means for (a) generating an audible tone in response to air pressures only within a predetermined pressure range, and (b) permitting the passage of exhaled air from said exhalation valving means to said second passage means only in response to air pressures below a preselected pressure, said preselected pressure being at least approximately equal to the upper limit of said predetermined pressure range; and



second pressure responsive means for allowing the passage of air from said exhalation valving means to said second passage means only in response to air pressures above said preselected pressure.

4,494,253

CARDIOVASCULAR VALVE PROSTHESIS

Demetrio Bicer, Warnes St. No. 2682, Buenos Aires, Argentina

Continuation-in-part of Ser. No. 312,906, Oct. 19, 1981, abandoned

This application Jan. 3, 1984, Ser. No. 567,806

Claims priority, application Argentina, Oct. 28, 1980, 283040

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **8 Claims**

1. A cardiovascular valvular prosthesis comprising in combination

an annular support having an outer circumferential groove carrying a textile ring

the interior circumference of said annular support having an intermediate support arm and a pair of fingers integrally formed with said annular support and extending into the inner space thereof

said support arm lying on a radius of said annular support and terminating short of the center thereof in a rounded contact surface

said fingers lying on a chord of said annular support between a diameter of the support and the terminus of said support arm, said chord being normal to said radius and in a plane parallel to the plane of said annular support and spaced from a similar parallel plane through said support arm, the ends of said fingers being curved toward the terminus of said support arm and forming rounded contact surfaces

an occluding disc mounted for free axial rotation and partial angular displacement within said annular support solely by

point contact with the contact surface of said support arm on one side and the contact surfaces of said fingers on the other side, the area of said contacts when the valve is closed being substantially the same as the area of said contacts when the valve is open

the distance between the contact surface of said fingers and the contact surface of said support arm being such as to permit the disc to be disposed, when in open position, at a maximum angle of between 85° and 90° with respect to its closed position, thereby providing passages through said support and around the disc which facilitate free fluid flow with minimum turbulence.

4,494,254

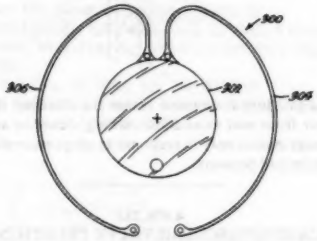
INTRAOCULAR LENS

Osvaldo Lopez, 2765 Greenwood Rd., Northbrook, Ill. 60062

Filed May 3, 1982, Ser. No. 373,860

Int. Cl.³ A61F 1/16, 1/24

U.S. Cl. 3—13 **7 Claims**



3. An intraocular lens, comprising:

a transparent lens element selected from the group consisting essentially of polymethylmethacrylate, hydrophilic acrylate, polyhydroxethylmethacrylate, silicone rubber and glass, said lens element having a periphery and defining a center and at least one instrument-receivable aperture; and

comet-shaped loop means extending generally about said periphery of said lens element and defining a generally circular arc of contact about said lens element for contacting the posterior chamber of an eye after extracapsular cataract extraction, said comet-shaped loop means comprising symmetrical stabilizers including a clockwise flexible convex stabilizing element and a counterclockwise flexible convex stabilizing arm, said stabilizing element and arm each being of optical medical grade plastic and extending arcuately in different directions from said periphery of said lens element for slightly less than 180 degrees to substantially fixedly stabilize said lens in a selected optical position, said stabilizing element and said arm each having an inner attached end fixedly connected to and engaging said lens element and an outer unattached free end positioned generally symmetrically opposite said inner attached end, and said attached ends being spaced from and cooperating with each other to define an access space therebetween.

4,494,255

VENTILATED TOILET DEVICE

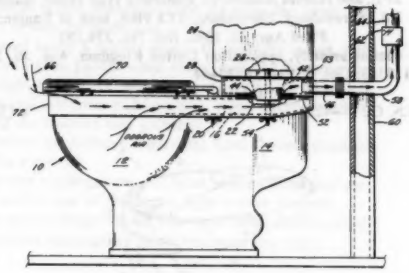
Charles E. Drummond, 861 Chamberlain Ct., New Haven, Ind. 46774

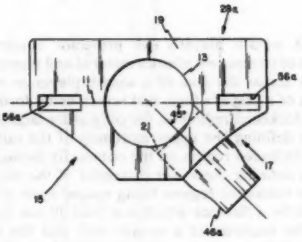
Continuation-in-part of Ser. No. 373,869, May 3, 1982, abandoned. This application Nov. 29, 1983, Ser. No. 555,936

Int. Cl.³ E03D 9/04

U.S. Cl. 4—213 **5 Claims**

1. In a flush type toilet having a toilet stool with front and rear portions and a flush water supply tank superposed over the rear portion, said front portion being a bowl and the rear portion including a water passage for conveying flush water from the supply tank to the bowl, the improvement comprising a generally flat aperture unitary spacer interposed between he rear portion and supply tank with the spacer aperture forming a path for flush water from the tank to the rear portion water passage, said spacer having opposite, spaced and parallel mounting surfaces engageable with said supply tank and said rear portions, a horizontally extending air vent opening in said spacer between said surfaces communicating with the spacer aperature, an air vent passage in said spacer between and parallel to said surfaces extending from the opening so that the air vent is positioned beneath the supply tank to allow the supply





tank to be positioned immediately adjacent a wall of the bathroom without interference between the wall and air vent, two mounting holes in said spacer on diametrically opposite sides respectively, of said aperture, said mounting holes being elongated in a direction parallel to a line drawn therebetween, said passage having an axis that extends at an acute angle with respect to said line and means for conveying air from the vent to a location remote from the toilet thereby drawing air from around and within the toilet bowl by way of the water passage and spacer aperture in a direction counter to the direction of normal flush water flow through the water passage and into the bowl.

4,494,256

MOTORIZED POOL COVER

Carl T. Radtke; Ewald A. Kaiser, both of Chicago; Siegfried M. Biedermann, Cary, and Rick J. Chapman, Vernon Hills, all of Ill., assignors to IBG International, Prairie View, Ill.

Filed Oct. 4, 1982, Ser. No. 432,775

Int. Cl.³ E04H 3/19

U.S. Cl. 4—502 **5 Claims**

1. An apparatus for covering a swimming pool or the like comprising:

a cover sheet for covering the pool,

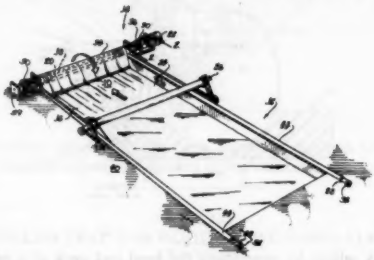
a reel for the cover sheet for winding the cover thereon to expose the pool and for unwinding the cover sheet therefrom to cover the pool,

motor drive means for driving the reel means to wind the

cover sheet thereon and to uncover the pool when the reel is turned thereby in a first direction,

cables driven by said motor drive means and connected to the sheet for pulling the cover from the reel and to extend the cover sheet to cover the pool, and

cable drum means at each end of the reel driven by said motor drive means and having surfaces varying in diameter for winding of cables thereon and compensating for the reduction in diameter of the cover sheet and preventing slack from developing in the cable or the cover sheet and manually operated independent adjustment means for adjusting the tension in the cables on the respective cable drum means to take up slack in a cable at each end of the reel, a spirally, grooved surface on the conical surface for receiving the cable therein,



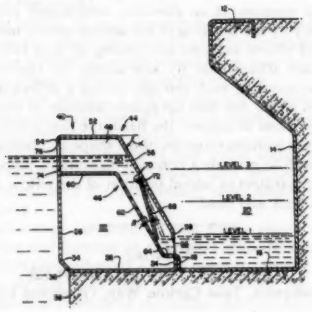
reel biasing means biasing the reel means in one direction, and drum biasing means biasing the cable drum means in an opposite direction, said biasing means preventing slack from occurring in the cover sheet or the cable means.

4,494,257

FLOW CONTROL DEVICE

Howard W. Peirish, 9688 Shirley Dr., Allison Park, Pa. 15101

Filed Apr. 7, 1983, Ser. No. 482,749
Int. Cl.³ E04H 3/16
U.S. Cl. 4—508 **25 Claims**



1. A skimming device for removing water from the surface of a swimming pool, said pool including a gutter conduit having a trough disposed at an elevation lower than the normal level of the water in the pool, said gutter having a pool-side wall with an upper edge disposed above the normal level of the water in the pool, the device comprising:

a housing in said gutter wall defining a flow passage with an inlet opening into the pool and an outlet opening into the gutter trough, said passage having a downwardly-inclined portion adjacent to said outlet; and

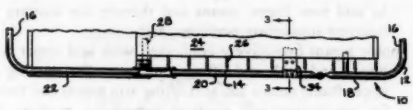
a plate pivotally disposed within said inclined portion of the passage such that under its own weight the lower edge of the plate contacts the lower surface of said passage a control the flow through said passage, said plate responsive to the level of water within the trough to reduce flow through said passage and to stop flow through said passage when the level of water in the trough exceeds a predetermined height.

4,494,258

SOFA BED MECHANISM

Theodore J. Blevins, and Paul R. Swiderski, both of Georgetown, Ky., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Sep. 7, 1982, Ser. No. 415,084
Int. Cl.³ A47C 17/04
U.S. Cl. 5—29 **3 Claims**



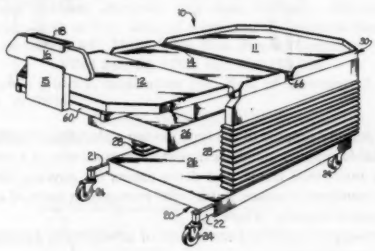
1. In a sofa bed mechanism which includes a foldable bed frame having side and end rails, a back support slat secured to and extending between said side rails at a position substantially underlying the upper back area of an occupant in a sleeping position on said bed frame, a fabric deck secured to said side rails and extending across said bed frame at a position above said support slat, said back support slat being bowed upwardly in its natural state and being movable downwardly under load so that it yieldably resists said load and exerts an outwardly directed force on said side rails tending to keep said deck substantially taut between said side rails, said back support slat being positioned directly beneath said deck and being of substantial width to thereby spread the reaction force of the slat against a bed occupant for occupant comfort purposes.

4,494,259

ADJUSTABLE BED

Robert E. Miller, Charlotte, N.C.; Joseph L. Russo; Richard Sonder, both of New York, N.Y., and Abraham H. Soni, Stillwater, Okla., assignors to Simmons Universal Corporation, New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 325,048
Int. Cl.³ A61G 7/06
U.S. Cl. 5—66 **4 Claims**



1. In an adjustable bed having

mattress supporting portions for supporting a mattress for an occupant in a variety of positions and including a head portion at a head end of the bed, a foot portion at a foot end of the bed, and a thigh portion between the head and foot portions,

base frame means for supporting the mattress supporting portions, and

position controlling mechanism operatively interconnecting the mattress supporting portions and the base frame means,

an improvement in said position controlling mechanism which facilitates movement of the bed into a variety of positions and comprising:

upper frame means having a head end and a foot end and operatively connected with said mattress supporting portions for moving said portions relative to said base frame means and one another and comprising lifting frame means operatively connected with said lifting arm means for movement vertically relative to said base frame means, and moving frame means mounted on said lifting frame means for movement longitudinally relative thereto,

lifting arm means operatively connecting said upper frame means and said base frame means for moving said head and foot ends of said upper frame means vertically relative to said base frame means and thereby for moving said mattress supporting positions, and

motor means operatively connected with said upper frame means and with said lifting arm means for moving said upper frame means and said lifting arm means and thereby for positioning said mattress supporting portions in a desired position, said motor means comprising a foot drop motor mounted on said moving frame means for movement therewith and operatively connected with said foot portion of said mattress supporting portions for pivoting said foot portion relative to said thigh portion.

4,494,260

BODY SUPPORT

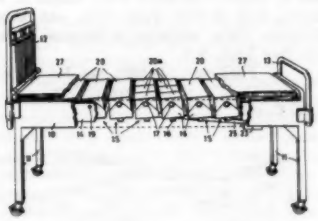
Peter J. Olds, 81 Adelaide St., Maryborough, Queensland, 4650, and Richard S. Blakeway, 81 Spitfire Crescent, Strathpine, Queensland, 4500, both of Australia

Filed Mar. 21, 1983, Ser. No. 447,322

Claims priority, application Australia, Mar. 25, 1982, PF3304

Int. Cl.³ A61G 7/10

U.S. Cl. 5—446 **3 Claims**



1. A body support of the type having a plurality of resiliently yieldable support members mounted transversely of a substantially horizontal frame, and drive means for moving the support members in unison to vary the pressure on parts of a body supported thereby, wherein;

the support members are blocks of substantially rectangular cross-section,

the support members are mounted on a series of carriers mounted on the frame for oscillation about a transverse axis, said carriers being of shallow box-like form adapted to receive removably the bottom parts of said support members, said carriers being further provided with elevated ends pivoted near to their tops to said frame for oscillation about axes through the upper parts of said support members, and wherein

the drive means is adapted to oscillate the carriers and the support members mounted thereon in unison to tilt the upper surfaces of the support members alternately in opposite directions from substantially horizontal.

4,494,261

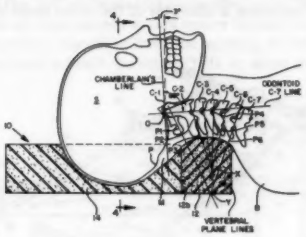
HEAD AND NECK CUSHION

Winston G. Morrow, Lake Oswego, Oreg., assignor to Spinal Dynamics, Inc., Lake Oswego, Oreg.

Filed Dec. 22, 1980, Ser. No. 218,719

Int. Cl.³ A47G 9/00

U.S. Cl. 5—436 **4 Claims**



1. A pillow for supporting the head and neck of a person lying in a supine position, comprising:

an elongated resilient first pillow member for positioning under and transversely of the neck; and

a flat resilient second pillow member affixed along one side of the first pillow member for positioning under the head;

the first pillow member having an upper support surface convexly curved and having a firmness such that the curvature of the neck is induced to conform to the cervical lordosis of a standing person;

the second pillow member having a planar upper surface and a compressibility such that the head is supported at an elevation in which Chamberlain's line is disposed in at least a vertical position;

said one side of the first pillow member meeting the second pillow member at a right angle to said planar upper surface, so that the first pillow member supports the neck without applying pressure lengthwise of the neck to the base of the head, the head being supported by the second pillow member at an elevation determined substantially entirely by the firmness of the second pillow member, the second pillow member comprising at least two coplanar portions affixed side by side along the transverse first pillow member, each portion having a different firmness so that a user can shift the pillow laterally to select one of said portions to support the head, the first pillow member having a uniform cross-sectional shape and firmness along its length to provide a constant measure of support to the neck regardless of lateral position of the pillow under the user's neck and head.

4,494,262

WATERBED MATTRESS COVER

Carl L. Robertson, 3104 Carlton Way, Oklahoma City, Okla. 73120

Filed Apr. 25, 1983, Ser. No. 488,026

Int. Cl.³ A47G 9/00

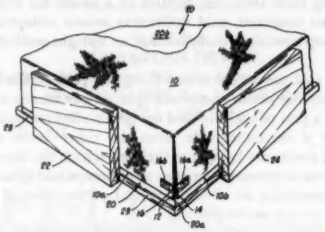
U.S. Cl. 5—451 **7 Claims**

1. A mattress cover for a waterbed mattress comprising:

a flexible fabric panel of rectangular configuration and having four rectangularly notched corners at each corner of the panel, the notching at each corner of the panel being rectangular in shape and formed by intersecting cuts projecting inwardly from, and normal to, two intersecting sides of the rectangular fabric panel; and

an elastomeric retainer band extending across each of the notches at each corner of the panel, and each of said bands having its opposite ends connected to parts of the panel on opposite sides of the respective rectangular notch, each of said bands projecting normal to the sides of the notch and

functioning to elastomerically draw said notch sides into parallelism and adjacent to each other when said flexible



fabric panel is placed on a waterbed mattress with the notches at each of corners of the mattress.

4,494,263

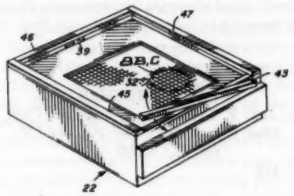
POLLEN TRAP FOR BEEHIVES WITH BEE FLIGHT CONTROL

Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253

Filed May 5, 1983, Ser. No. 491,773

Int. Cl.³ A01K *47/06*

U.S. Cl. 6—4 R **3 Claims**



1. A pollen trap for collecting pollen from bees as they enter a beehive comprising:

a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive,

a drawer slidably arranged in said frame to assume a substantially horizontal position in the beehive,

said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees,

a second screen mounted in said frame above said drawer and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,

a third screen mounted on said frame above said second screen and forming an elongated space therebetween,

said third screen having a mesh opening causing bees crawling through said third screen to divest their legs of a substantial portion of the pollen carried thereon,

an entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front of said drawer and connected with the space between said second screen and said third screen, and

a means mounted in said entranceway for selectively closing said entranceway to bar entrance into the beehive of the pollen carrying bees,

said entranceway comprising an elongated opening extending laterally of the movement of the drawer in the pollen trap, and

said means comprising a single elongated bar pivotally mounted at its midpoint in said entranceway for closing said entranceway when pivotally mounted to a given position, said bar having a length substantially equal to the length of said elongated opening so that when the bar is rotated past said given position, bees can enter the hive at each end of the bar.

4,494,264

ELEMENT PERMITTING TO WASH DIFFERENT TEXTILE ARTICLES IN THE SAME BATH AND WASHING METHOD USING SAID ELEMENT

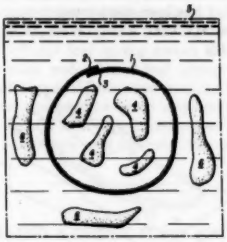
Daniel Wattiez, Lozanne, and Jean-Claude Hennion, Mons-en-Baroeul, both of France, assignors to Institut Textile De France, Bourlogne sur Seine, France

Filed Jul. 11, 1983, Ser. No. 512,529

Claims priority, application France, Jul. 20, 1982, 82 12851

Int. Cl.³ D06F *35/00*

U.S. Cl. 8—150 **8 Claims**



1. An element permitting to simultaneously wash in the same bath two types of textile articles, the articles of the first type being dyed with dyes which are liable to run in the bath and to settle on the articles of the second type, wherein said element is in the form of a filtering envelope in which one of the two types of textile articles are enclosed, said envelope being made from a material which has a tinctorial affinity for the dyes liable to run in the washing bath, greater than the tinctorial affinity of the type of articles on which the running dye is liable to settle, and the porosity of said envelope being such that the washing water can traverse it freely while allowing a long enough contact with the washing for the dyes to settle on that envelope, and thus preventing the dye from re-depositing.

4,494,265

METHOD OPERATING A TUNNEL-TYPE BATCH WASHING MACHINE

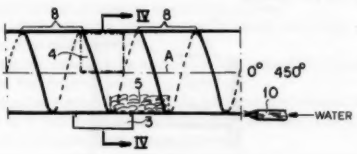
Herbert Schmidt, Arolsen, and Hans Steinort, Hildesheim-Itzum, both of Fed. Rep. of Germany, assignors to Senkingwerk GmbH KG, Hildesheim, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,458

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927874

Int. Cl.³ D06F *21/02, 37/08*

U.S. Cl. 8—159 **4 Claims**



1. A method of operating a tunnel-type batch washing machine having an outer tunnel-forming housing tube centered on a horizontal axis and a helical wash screw rotatable in said tube about said axis and having a plurality of flights defining axially spaced compartments, said method comprising the steps of:

flowing a liquid axially in one direction through said housing;

holding respective batches of articles to be washed in said compartments between said flights;

oscillating said screw back and forth about said axis through substantially more than 360° and thereby agitating said articles in said liquid;

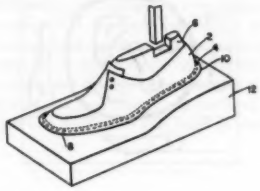
periodically rotating said screw about said axis through substantially more than 720° in a rotational direction to advance said batches axially opposite said one direction.

4,494,266

MOLDED SHOE

Hans Bartneck, 5291 Autumn Wood Dr., Cincinnati, Ohio 45242

Division of Ser. No. 145,560, May 1, 1980, Pat. No. 4,333,193.
This application Mar. 17, 1982, Ser. No. 358,919
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ A43D *9/00*; A43C *13/08*; A43B *9/10*
U.S. Cl. 12—142 RS **1 Claim**



1. An integrally molded upper and shoe sole made by the following steps in sequence:

(a) stitching a full sole socklining to a shoe upper at a given distance from the lower peripheral edge of the upper, said distance defining a mold engaging lip of said upper;

(b) mounting said upper with stitched socklining on a shoe last to conform said full sole socklining and upper to said last;

(c) supporting the lasted upper and socklining in an upper mold;

(d) filling a lower mold with an expanding, foaming resin for forming a sole; and

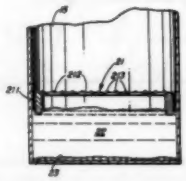
(e) mounting said upper mold over said lower mold with said mold engaging lip of said upper secured resiliently between the edges of said upper and lower molds for a time sufficient to cure said resin to the underside of said lasted full sole socklining and upper and contour said upper, said socklining and said sole to said last.

4,494,267

BRUSH CLEANER AND ARTIST'S KIT

C. Thomas Fredley, 1119 N. 46th St., Phoenix, Ariz. 85008

Filed Nov. 8, 1982, Ser. No. 440,002
Int. Cl.³ A46B *17/06*
U.S. Cl. 15—104.92 **5 Claims**



1. Brush cleaning apparatus comprising in combination:

means for inertially removing fluid from the bristles of a brush, comprising means for intercepting the path of the bristles of a moving brush so as to abruptly affect the speed of movement of the bristles to inertially disperse fluid therefrom by a series of abrupt reversals of inertial forces;

collection means coupled to a said means for inertially removing fluid from the bristles of a brush for collecting fluid so removed, said collection means comprising an open top container comprised of an upright walled enclosure;

wherein said means for intercepting the path of the bristles of a moving brush comprises splatter bar means coupled across a pair of walls of said upright walled enclosure and separated on either side from the other walls of said walled enclosure by spaces through which the brush may be moved to cause the bristles to intercept said splatter bar and experience an abrupt reversal of the inertial forces acting on the moving brush;

a liquid thinner containing vessel for washing the bristles of a brush;

float means for floating on the liquid thinner contained within said vessel, said float means being disposed to sink within said liquid thinner when the bristles of a brush are drawn into contact with said float means;

said float means further comprising a surface bearing a plurality of orifices through which said liquid thinner may flow as seen float means is submerged when in contact with the bristles of a brush and as said float means rises to the surface of said liquid when the bristles of a brush are removed from contacting said float means; and

said surface further comprising a plurality of vertically disposed raised elements for separating the bristles of a brush brought into contact with said float means.

4,494,268

PAINT BRUSHES

Alan C. Chu, 2437 E. Lincoln Ave., Anaheim, Calif. 92806

Filed May 2, 1983, Ser. No. 466,121
Int. Cl.³ A46B *7/04*
U.S. Cl. 15—176 **2 Claims**

1. A paint brush comprising a handle and a bristle portion detachably secured to said handle, said handle having an open hollow wall portion at the end adjacent said detachable bristle portion, said hollow wall portion of the handle having two apertures formed in and through said wall portion, each aperture formed opposite to each other, the bristles of the bristle portion being fixedly mounted in a retaining member which is removably mounted within said hollow wall portion of the handle, said retaining member being formed with a pair of opposing resilient arms, each arm being formed at each free end thereof with a transversely extending projection, said arms extending upwardly away from and outwardly from the extent of the bristles such that when the retaining member is mounted within said hollow handle portion, the arms spring outwardly and each projection respectively engages into each aperture of said wall portion, and when pressure is inwardly applied to said projections through said apertures so that each projection

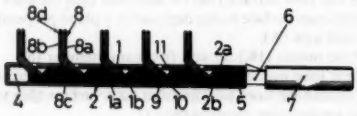
is forced out of engagement therewith, the bristle portion may be removed from within said hollow wall portion of said handle.

4,494,269

HAIRBRUSH DEVICE

Seigo Makabe, 543 Toyano, Niigata, Japan

Filed Jul. 1, 1980, Ser. No. 165,022
Int. Cl.³ A46B 9/10
U.S. Cl. 15—203 **5 Claims**



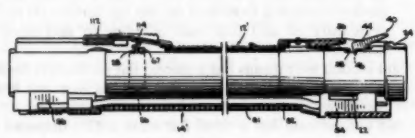
1. A collapsible hairbrush comprising:
a brush body having a hollow interior region comprising an upper cover and a lower base;
a movable flat board which is shorter in length than said hollow interior region and is provided in the hollow interior region so as to move freely back and forth;
a plurality of transverse axles rotatably provided in equal intervals on the movable flat board;
a handle coupled to a base end of the movable flat board by means of a connecting part, said handle and connecting part being axially aligned with said base;
a plurality of guide holes provided in the upper cover so as to form longitudinal slits through which brush tips extend, said brush tips comprising upper long legs and lower short legs, said brush tips forming an obtuse angle between said long and short legs, the bottom ends of the short legs being secured to said axles;
said guide holes having a front wall and a back wall;
a stopper mounted on said connecting part, said stopper being movable within said connecting part so it can be slide inside said hollow brush body, said stopper being movable away from said connecting part when outside of said brush body so as to prevent the handle from being moved in a direction towards said brush body;
whereby said axles may be moved longitudinally back and forth by the handle so that the brush tips are raised up and down by being engaged with the front and rear walls of the guide holes and so that the brush tips can be locked in the raised position when said stopper abuts said brush body.

4,494,270

VACUUM CLEANER WAND

William P. Ritzau, Old Greenwich; Aveo J. Casselli, Norwalk, both of Conn., and Gene S. Fleischer, Spring Valley, N.Y., assignors to Electrolux Corporation, Stamford, Conn.

Filed Mar. 25, 1983, Ser. No. 478,887
Int. Cl.³ A47L 9/24
U.S. Cl. 15—377 **8 Claims**



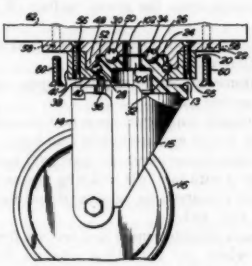
2. A wand for connecting a vacuum cleaner and a power nozzle, said wand comprising: a sheath having first and second ends; an upper wand assembly removably received in said first end of said sheath, said upper wand assembly having a first end and a second end, said first end of said upper wand assembly being adapted to be detachably connected to a hose handle of such a vacuum cleaner; a lower wand assembly having a first end removably received in said second end of said sheath and in releasable locking engagement with said second end of said upper wand assembly, and having a second end adapted to be connected to a power nozzle; said upper wand assembly having a hole formed therein adjacent said second end thereof; said first end of said lower wand assembly being adapted to be received in said second end of said sheath and telescoped about said second end of said upper wand assembly; leaf spring means having one end secured to said first end of said lower wand assembly and having adjacent its other end a button for engaging said hole in said upper wand assembly for detachably connecting said upper and lower wand assemblies; and cam means adjacent said second end of said upper wand assembly when said upper and lower wand assemblies are in said releasable locking engagement, said cam means being movable axially of said upper wand assembly from a position remote from said other end of said leaf spring means to an axial position between said other end of said leaf spring means and said button and a radial position between said leaf spring means and said upper wand assembly to space said other end of said leaf spring means radially away from said upper and lower wand assemblies to disengage said button from said upper wand assembly.

4,494,271

CASTER HAVING A THREE PIECE ENCAPSULATING BEARING ASSEMBLY

Morton J. Perlin, Miami Beach, and Richard P. Garneau, Davie, both of Fla., assignors to Perlin Materials Handling Development Co., Miami, Fla.

Filed Nov. 30, 1981, Ser. No. 326,053
Int. Cl.³ B60B 33/00
U.S. Cl. 16—21 **32 Claims**



1. A caster comprising:
a neck at the top portion of the caster,
a platform at and about the lower portion of said neck,
leg means depending from said platform for securing a wheel thereto,
a rotatable wheel journaled to said leg means,
a ball bearing retaining plate normally about said neck and adjacent to said platform,
a top plate about said neck and above and releasably secured to said ball bearing retaining plate,
complementary annual grooves in adjacent portions of said neck, said ball bearing retaining plate and said top plate forming an annular raceway, and
ball bearings encapsulated in said annular ball bearing raceway,
said ball bearing plate includes a rim extending inwardly for sliding engagement with said neck with its annular groove in its inner and uppermost end adjacent said groove in said neck, and an outer annular sleeve extending upwardly from said rim and spaced from and about said neck to form an annular chamber therebetween, and wherein the length of said neck from below its groove to said shoulder is

greater than the height of said ball bearing rim for positioning said ball bearing retaining rim on said platform so that its groove is below said neck groove to facilitate loading of the ball bearings prior to said top plate being releasably secured thereto, and

said top plate includes an inner annular sleeve depending therefrom with its annular groove in the lower and inner end thereof and wherein said inner annular sleeve slidably extends into said annular chamber when said plates are releasably secured together for encapsulating said ball bearings in said annular raceway.

4,494,272

REVERSIBLE CASTER DEVICE HAVING BRAKE MECHANISM

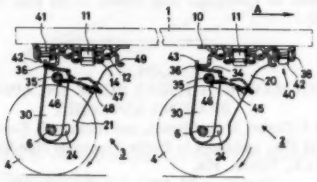
Natsuo Morita, 1983-1 Oboka Takadacho, Numazu-shi, Shizuoka-ken, Japan

Filed Jul. 13, 1982, Ser. No. 397,831

Claims priority, application Japan, Jul. 21, 1981, 56-112932; Oct. 26, 1981, 56-158257[U]; Jun. 14, 1982, 57-100720

Int. Cl.³ B60B *33/02*

U.S. Cl. 16—35 R **18 Claims**



1. A caster device for a travelling body, comprising:

a base mounted upon the lower surface of said travelling body;

a first frame mounted upon said base so as to be rotatable about a first axis;

a second frame pivotably mounted upon said first frame about a second axis;

a wheel rotatably supported upon said second frame;

first locking means mounted upon said base;

second locking means mounted upon said second frame for cooperating with said first lockinhg means so as to permit or prevent rotational movement of said first frame about said first axis; and

braking means mounted upon said second frame for engaging said wheel, yet permitting rotation thereof, and for permitting said first and second locking means to be engaged so as to prevent said rotational movement of said first frame about said first axis in response to a first directional movement of said travelling body along a surface upon which said wheel is rotating, said braking means also engaging said wheel for stopping rotation thereof and for causing pivotal movement of said second frame and disengagement of said first and second locking means so as to permit said rotational movement of said first frame about said first axis in response to a second directional movement of said travelling body along said surface upon which said wheel is rotating in which said second directional movement is the reverse of said first directional movement.

4,494,273

SWING CONTROL HINGE

Albert E. Straus, 1643 W. 8th St., Erie, Pa. 16505

Filed Sep. 27, 1982, Ser. No. 423,817

Int. Cl.³ E05F *3/20*

U.S. Cl. 16—50 **14 Claims**

1. A swing control hinge comprising a first butt (1),

a second butt (2),

pivot means (5, 6, or 15) swingably connecting said first butt (1) to said second butt (2) to swing about an axis (A),

said first butt (1) being adapted to be connected to a door (24) having means to accelerate said door (24) toward closed postion,

said second butt (2) being adapted to be connected to a door stile (23), a first cam member (5),

means supporting said first cam member (5) on said first butt (1), a second cam member (6),

means supporting said second cam member (6) on said second butt (2),

a first flat cam surface (26) on said first cam member (5),

said first cam surface being deposed in a plane perpendicular to said axis (A),

first lobe means (18,) on said first cam member (5),

said first lobe means (18) having a first flat inclined surface (7) extending from said first flat cam surface (26) toward said second cam member (6),

a first flat cam surface (26) on said second cam member (6),

said first cam surface being disposed in a plane perpendicular to said axis (A),

second lobe means (18) on said second cam member (6) having an inclined flat surface (7) extending from said first flat surface (26) on said second cam member (6) toward said first cam member (5),

resilient means (14) supported on said hinge between said first cam member (5) and said pivot means (15),

said first butt (1) being adapted to swing with said door (24) from an open position through a first predetermined path and a second predetermined path toward a closed position,

said first flat cam surface (26) on said first cam member (5)

being adapted to engage said second lobe means (18) on said second cam member (6) as said door swings through said first predetermined path whereby no compressive force is exerted on said resilient means as said door swings through said first predetermined path,

said first flat inclined surface (7) of said first lobe means (18) engaging said first flat inclined surface (7) on said second cam member (6) when said door swings through said second predetermined path whereby the compressive force on said resilient means is increased to decelerate the door; wherein said first lobe means (18) has a second flat surface (9) disposed in a plane parallel to said first flat surface (26) and spaced therefrom,

said lobe means on said second cam member is adapted to move along said second flat surface as said door moves through a third path, maintaining compression on said resilient member (14), wherein said first cam member (5) has a third flat surface (27) coplaner with said first flat surface and said first lobe means has a second inclined surface extending from said second flat surface (9) radially outwardly of said first cam member to said third flat surface,

said second lobe means has a second flat surface (9) disposed in a plane parallel to said first flat surface and spaced therefrom,

said second cam has a third flat surface (27) disposed in a common place with said first flat surface,

said second lobe means further comprising a second inclined surface extending from said second flat surface (9) to said third flat surface (27),

said first cam member and said second cam member being slidable along said axis,

the second flat surfaces (9) on the first cam member (5)

engage the second flat surfaces (9) on the second cam member (6) introducing no additional compression on the resilient means (14) during the third path of movement of the door and at the end of the third path, as the surface (9) on the first cam member (5) passes the surface (9) on the second cam member (6), the second inclined surface (25) on the second cam member (6) thereby accelerating the door through a fourth path of movement toward a final latching position.

4,494,274

COOKWARE WITH COVERS HAVING METAL HANDLES

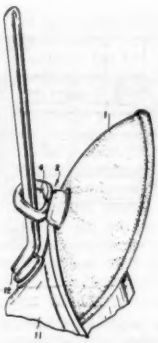
Heida L. Thurlow, 10814 Riverview, Houston, Tex. 77042

Filed Dec. 8, 1982, Ser. No. 447,740

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220156

Int. Cl.³ B65D *25/28*

U.S. Cl. 16—110 A **5 Claims**



1. A cooking and frying utensil comprising a utensil structure and a utensil cover, a cover holder, first attachment means attaching said cover holder to said utensil cover, said cover holder comprising a first hollow dished-out thin-walled metal hollow body providing an enlarged surface area for facilitating cooling of said first hollow body by the surrounding atmosphere, said first hollow body having an inside surface and an outside surface, said first hollow body also having a first rim held abuttingly against said utensil cover by said first attachment means, a metal ring element joined to said outside surface of said first hollow body, said ring element having an outer wall and an inner wall, said ring element having a central opening bounded by said inner wall, a handle holder, second attachment means attaching said handle holder to said utensil structure, said handle holder comprising a second hollow dished-out thin-walled metal hollow body providing an enlarged surface area for facilitating cooling of said second hollow body by the surrounding atmosphere, said second hollow body having an inside surface and an outside surface, said second hollow body also having a second rim held abuttingly against said utensil structure by said second attachment means, and a metal handle element joined to said outside surface of said handle holder, said handle element being of an elongated U-shaped configuration having two spaced legs, said handle element being constructed to have an overall width less than that of said central opening of said ring element such that said utensil cover is supportable on said utensil structure by sliding said ring element onto said handle element.

4,494,275

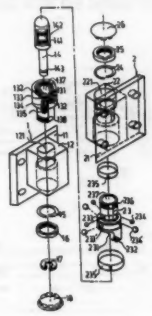
SWINGING DOOR HINGE ASSEMBLY HAVING A ROLLING MEMBER

Chen Hsi-Shan, Taipei, Taiwan, assignor to Sun Longitude Corporation, Taipei, Taiwan

Filed Jul. 23, 1982, Ser. No. 401,217

Int. Cl.³ E05F *1/04*

U.S. Cl. 16—314 **6 Claims**



1. A swinging door hinge assembly comprising a primary hinge and a secondary hinge,

said primary hinge including a left side primary piece to be attached to an upper portion of a door jamb and a right side primary piece to be attached to an upper portion of a door; a base sleeve of the left side primary hinge piece fixedly supporting a staircase-shaped axle seat, an axle rod being installed in a center hole of said staircase-shaped axle seat; during the assembling of said left and right side primary hinge pieces, a top end of said axle rod being insertable into an axle hole of the right side primary hinge piece; a rolling member associated with a lug under said axle rod being disposed in the staircase-shaped groove on top of said staircase-shaped axle seat; wherein upon the door being opened clockwise or counter-clockwise, the lug drives said right side primary hinge piece to rotate over said left side primary hinge to cause said rolling member of said lug under the axle rod to roll upwards along said staircase-shaped groove; wherein said door is able to be closed slowly while said rolling member rolls downwards along said staircase-shaped groove; and

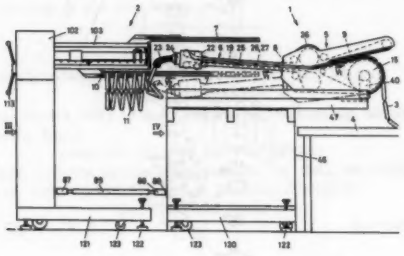
said secondary hinge comprises a left side secondary hinge piece attachable to the lower portion of the door jamb and a right side secondary hinge piece attachable to the lower portion of the door; an axle rod being inserted into a base sleeve of said left side secondary hinge piece; an upper portion of said axle rod being positioned in an inner eccentric axle bushing to be inserted inside an outer eccentric axle bushing; wherein upon assembling the left and right secondary hinge pieces together, said outer eccentric axle bushing being positioned in an axle hole of said right side secondary hinge piece; wherein in opening or closing the door, said right side secondary hinge piece is rotated on said left side secondary hinge piece, and the axle bushing of said right side secondary hinge piece rotates around said outer eccentric axle bushing; by means of mutual rotation of said inner and outer eccentric axle bushings, a co-axis being formed automatically with said primary hinge, wherein the staircase-shaped groove on the top surface of the staircase-shaped axle seat of said primary hinge is gradually and slantingly raised in height from 0° position to either the clockwise or counter-clockwise direction; and upon reaching a point about 80°, there is a flat surface; and at the points approximately 0° and 90°, a depression on a less slanted slope is furnished, a spring and a retarding pin being installed in said depression.

4,494,276

FEEDING MACHINE AND RECEIVING DEVICE FOR APPORTIONED SAUSAGE CHAINS

Bruno Trottmann, Gossau, Switzerland, assignor to C. Hoegger & Cie. AG, Gossau, Switzerland

Filed Mar. 4, 1982, Ser. No. 354,675
Claims priority, application Switzerland, Mar. 5, 1981, 1482/81
Int. Cl.³ A22C *15/00*
U.S. Cl. 17—1 F 18 Claims



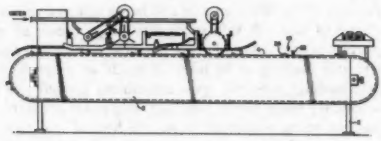
1. Feeding machine and receiving device for apportioned sausage chains, characterized by: the feeding machine (1) having a sausage conveying device (5) with a feeding arm (6) which is driven in conically circular movements around a smoking rod (7), the conveying device being provided with endless conveyer belts (8, 9, 19) between which a sausage chain (3) can be transported from a feeding end to a discharging end, the smoking rod being clamped into the receiving device and being movable in a longitudinal direction along a center axis of the cone defined by the conically circular movement of the feeding arm, and the feeding machine and the receiving device being coupled with each other such that the conically circular movement of the feeding arm and the longitudinal movement of the smoking rod can be adjusted relative to each other.

4,494,277

CRAB HOLDER FOR PROCESSING MACHINE

Calvert B. Tolley, and Andrew T. Tolley, both of Wingate, Md., assignors to Sea Savory, Inc., Cambridge, Md.

Continuation-in-part of Ser. No. 169,150, Jul. 15, 1980, Pat. No. 4,380,094. This application Sep. 30, 1982, Ser. No. 431,284
Int. Cl.³ A22C *29/00*
U.S. Cl. 17—71 6 Claims



1. As a new article of manufacture, a two-part holder for supporting a crab in its upstream-downstream movement through the successive work stations of a crab processing machine, comprising:

(a) a first holder part adapted to be in the upstream position in use, having a flat bottom surface, a flat upstream wall at a right angle to the bottom surface, a flat upper surface parallel to the bottom surface and extending downstream a distance shorter than that of the bottom surface, thus forming an upstanding part extending transversely of the holder part which is divided into equal parts by a central opening extending in the upstream-downstream direction, and an inclined downstream facing surface connecting the downstream edges of the upper surface and the bottom, which is concave both transversely and in the upstream direction, and

(b) a second holder part adapted to be in the downstream position in use, having a flat bottom surface, a flat downstream located wall, and an inclined upstream facing surface at least the central part of which has a depression in it,

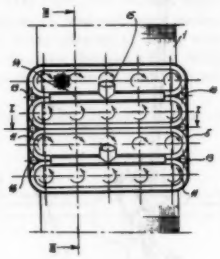
the two holder parts being adapted to be placed in close upstream-downstream proximity to form a single support for the body of a crab with the carapace positioned upwardly.

4,494,278

APPARATUS FOR THE PRODUCTION OF A FIBROUS WEB

Karl K. K. Kroyer, Le Schuykill, 19, Blvd. de Suisse, Apt. No. 1, Bloc B, 3. etage, Monte Carlo, Monaco, and Torben Rasmussen, Brondby Strand, Denmark, assignors to Karl Kristian Kobs Kroyer, Monte Carlo, Monaco

Continuation of Ser. No. 211,856, Dec. 1, 1980, abandoned, which is a continuation of Ser. No. 958,482, Nov. 7, 1978, abandoned. This application Mar. 9, 1982, Ser. No. 356,477
Claims priority, application Denmark, Nov. 8, 1977, 4956/77
Int. Cl.³ D01G *25/00*; D04H *1/00*
U.S. Cl. 19—304 7 Claims



1. An apparatus for producing a uniform and strongly adherent air-laid fibrous web, said apparatus comprising a fiber distributor, a suction box positioned below said fiber distributor and a movable foraminous forming wire located therebetween, said fiber distributor including

a housing which has a perforated bottomwall which faces said movable foraminous forming wire,

at least two rows of stirring means positioned in said housing, each row extending transversely of said housing, and each stirring means including an impeller which is rotatable in a plane parallel to the perforated bottom wall of said housing,

means for rotating the impellers of the stirring means in each row in the same direction but oppositely to the direction of the rotation of the impellers in the adjacent row(s),

at least one partition means extending transversely across said housing, a separate partition means acting to separate adjacent rows of stirring means, each partition means including a vertically-extending portion which has a bottom edge which is spaced apart from the perforated bottom wall of said housing and a top edge,

overhang elements which extend in opposite directions away from the top edge of each partition means and towards the adjacent rows of stirring means, and

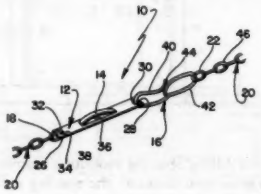
at least one discharge means for discharging an air stream containing dry, defibrated fibrous material downwardly toward the top edge of a partition means, a separate discharge means being associated with alternate partition means, each discharge means acting to supply the dry, defibrated material to zones on each side of the associated partition means such that it is stirred, then spread in a sausage-shaped configuration on the perforated bottom

wall therebelow, and then deposited on the foraminous forming wire therebelow, the overhang elements of the partition means acting to prevent dry, defibrated material from being stirred upwardly thereabove.

4,494,279
JEWELRY CHAIN CLASP ASSEMBLY

Howard M. Kilguss, Rehoboth, Mass., assignor to Excell Manufacturing Company, Providence, R.I.

Filed May 24, 1983, Ser. No. 498,459
Int. Cl.³ A44C 5/00
U.S. Cl. 24—336 **6 Claims**



1. A clasp assembly for detachably interconnecting first and second ends of a jewelry chain and the like comprising:

(a) an elongated substantially flat bar member having first and second ends, the first end of said bar member being connected to said first chain end, said bar member having an aperture therein adjacent the second end thereof;

(b) a resiliently depressible tongue element integrally struck in said bar member, said tongue element extending generally towards said first bar member end and terminating in an upwardly disposed free terminal end, said bar member sized to permit an element having an aperture dimensioned slightly greater than the internal cross-sectional dimensions of said bar member to pass freely over said second bar member end and onto said chain without removal of said bar member first end from said chain, with said tongue element preventing inadvertent removal of the element from the chain; and

(c) a fastener element connected to said second chain end, said fastener element having a connecting loop portion which is receivable in said bar member aperture to detachably interconnect said fastener element to said bar member.

4,494,280
METHOD AND MACHINE TOOL FOR A CIRCULAR MACHINING OF ECCENTRIC SHAFT PORTIONS

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Jul. 20, 1982, Ser. No. 400,110
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132560
Int. Cl.³ B23C 3/06
U.S. Cl. 29—6 **18 Claims**

1. In a method of machining a shaft workpiece with an externally cutting tool to form said shaft workpiece with an eccentric portion having a predetermined circular cross-section, comprising the steps of

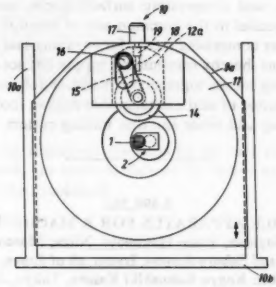
moving said tool relative to said shaft workpiece in the longitudinal direction of the latter to position said tool adjacent to a predetermined portion of said shaft workpiece,

moving said tool transversely to the longitudinal direction of said shaft workpiece to engage said tool with said shaft workpiece, and

machining said predetermined portion of said shaft workpiece with said tool while imparting to said tool and said shaft workpiece a feed movement relative to each other whereby said tool is moved around said shaft workpiece along a predetermined circular path,

the improvement residing in that

after said tool has thus been positioned, said tool and said predetermined portion of said shaft workpiece are moved relative to each other in a direction which is transverse to said longitudinal direction to a position in which the center of said predetermined cross-section of said eccentric portion coincides with the center of said circular path,



said tool is subsequently moved to engage said predetermined portion of said shaft workpiece,

said tool which engages said predetermined portion of said shaft workpiece is driven to machine said predetermined portion of said shaft workpiece,

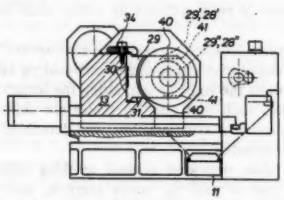
said shaft workpiece is held in position as it is machined by said tool, and

said tool is moved around said shaft workpiece along said circular path as said predetermined portion of said shaft workpiece is machined by said tool.

4,494,281
CRANKSHAFT MILLING MACHINE

Karlheinz Schmid, Neckartenzlingen, Fed. Rep. of Germany, assignor to Gebrueder Heller Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 290,526, Aug. 6, 1981, abandoned, which is a division of Ser. No. 064,068, Aug. 6, 1979, Pat. No. 4,309,134. This application Jan. 16, 1984, Ser. No. 571,338
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836341
Int. Cl.³ B21K 1/08; B23C 3/06
U.S. Cl. 29—6 **4 Claims**



1. A crankshaft milling machine comprising milling slide means, drive spindle means rotatably supported in said milling slide means, exchangeable milling tool means including an arbor and a plurality of disk milling cutters operatively held on said arbor, means for maintaining said disk milling cutters at axial spacings from one another along said arbor of said exchangeable milling tool means, bearing means rotatably supporting said arbor of said exchangeable milling tool means at least at two axially spaced locations in said milling slide means,

said bearing means comprising only one axial bearing located between two adjacent disk milling cutters of said plurality of disk milling cutters, mounting means for mounting the milling tool means exchangeably on the milling slide means independently of the drive spindle means and along a common axis of rotation, and clutch means operatively interposed between said drive spindle means and said exchangeable milling tool means, said clutch means comprising cooperating surface means including clutch surface means and complementary surface means formed in the drive spindle means and in said milling tool means, said cooperating surface means being oriented generally parallel to the common axis of rotation, said clutch means further comprising means for engaging said cooperating surface means thereby transmitting torque but not axial forces, said mounting means together with said clutch means permitting the removal of said exchangeable milling tool means as a unit including said arbor and disk milling cutters.

4,494,282

JIG TABLE APPARATUS FOR A MACHINE TOOL

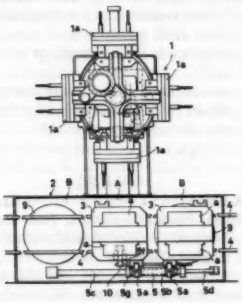
Jinsei Ida, Sayama; Yosio Hagimoto, Niiza; Masao Takahashi, Kawagoe, and Saburo Azuma, Iruma, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,879

Claims priority, application Japan, Jan. 30, 1981, 56/11659

Int. Cl.³ B23Q *41/02*

U.S. Cl. 29—33 P **7 Claims**



4. A jig table apparatus for use with a machine tool, comprising:

an elongated base member disposed laterally adjacent the machine tool;

at least one pair of right and left jig tables, each having a workpiece;

a transfer member disposed on said base member and having means for cooperative engagement with said jig tables for shifting them to the right or left, along the length of said base member, such that said jig tables are shifted to a working station or a work attaching and detaching station on said base member;

an elevating table, provided at said working station for supporting one of said jig tables thereon, and having means for providing upward and downward movement thereof;

a rotatable turntable, provided at said attaching and detaching station for supporting one of said jig tables thereon and having means for the rotation of the jig table thereof; and

at least one claw member, pivotally attached to said transfer member and engageable with each of said jig tables, such that said claw member engages or disengages a corresponding jig table responsive to the movement of said elevating table.

4,494,283

DEVICE FOR FILLING SPACING MOUNTING FRAMES WITH HYGROSCOPIC MATERIAL

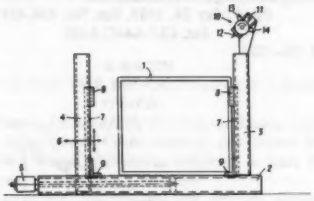
Peter Lisec, Bahnhofstrasse 34, Amstetten-Hausmening, Austria

Filed Aug. 25, 1982, Ser. No. 413,227

Claims priority, application Austria, Apr. 19, 1982, 1506/82

Int. Cl.³ B65B *7/28*; E06B *1/16*

U.S. Cl. 29—33 K **9 Claims**



1. Device for filling spacing mounting frames of insulating glass with hygroscopic material, the spacing mounting frames having corners that are formed integrally by bending from a single hollow profiled bar, comprising a mounting support (8,18) in the form of two substantially vertical upstanding columns (3,4) having means for supporting between them the spacing mounting frame (1) to be filled and at least one multi-purpose tool (10) having means (12) for forming an opening in the outer wall of the spacing mounting frame, a nozzle (13) for feeding the hygroscopic material into the spacing mounting frame (1) and a nozzle (14) for supplying material used for sealing the inlet opening.

4,494,284

ROLL

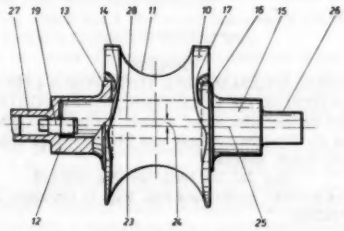
Helmut Post, Mettmann, Fed. Rep. of Germany, assignor to Schmolz & Bickenbach, Düsseldorf, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,617

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019921

Int. Cl.³ B21B *27/02*

U.S. Cl. 29—123 **14 Claims**



1. A multi-part roll comprising a hollow cylindrical axially extending roll body with a pair of ends spaced apart in the axial direction, one journal connected in a form-locking manner into one of the ends of said roll body, another journal connected in a form-locking manner into the other end of said roll body, said journals having aligned longitudinal axes defining the axis of rotation of said roll and the axis of the connection of said journals and said roll body disposed in spaced relation to the axis of rotation of said roll, at least one of said journals having an axially extending extension thereon projecting at least partially into said roll body for connecting said journals together, said extension on said journal extends through said roll body forming a support axis and is attached at its free end to the

other said journal, a thread bolt rigidly and detachably connects said two journals to one another via said extension, and said thread bolt having a right-hand thread and left-hand thread.

4,494,285

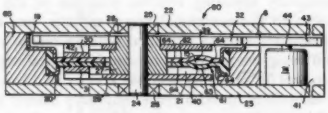
METHOD OF MAKING A MEMBER DEFINING A LUMEN FOR A PERISTALTIC PUMP AND MEMBER PRODUCED BY SAID METHOD

Matthew O'Boyle, Somers, Conn., assignor to Windsor Medical, Inc., Enfield, Conn.

Continuation-in-part of Ser. No. 408,198, Aug. 16, 1982,. This application Apr. 25, 1983, Ser. No. 488,454

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—156.4 R **11 Claims**



1. A method of making a member defining a lumen for a peristaltic pump, which pump includes a housing member defining a cavity and having at least one opening in the walls thereof to receive the lumen defining member said lumen defining member having complementary upper and lower portions with flanges extending on both sides of said portions of said lumen defining member, comprising the steps of:

providing said housing member with separate means for locking material of the member defining a lumen thereto,

substantially closing the cavity of said housing member with mould defining means configured to form one of said complementary concave upper and lower portions of said lumen defining member, including flanges extending on defining member.

introducing into said cavity in a plastic state the material to form said one of said portions of said lumen defining member and allowing said material to set such that said one of said portions of said lumen defining member is locked to said housing member by said locking means, and

providing the other of said complementary portions of said lumen defining member and bonding said other portion to said one portion at the flanges extending on both sides of said lumen.

4,494,286

CONNECTING ROD ARRANGEMENT

Vernon R. Kaufman, Cedarburg, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Oct. 25, 1982, Ser. No. 437,363

Int. Cl.³ B23P *15/10*

U.S. Cl. 29—156.5 A **5 Claims**

1. The method of fabricating and assembling a connecting rod for coupling a crankshaft and piston comprising:

casting an aluminum connecting rod blank having an opening near each end thereof;

machining one of the openings to a preferred size;

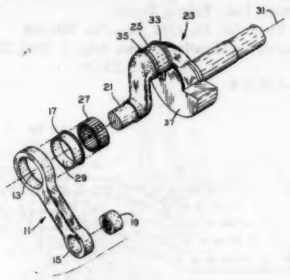
pressing a sleeve into the machined opening for frictional engagement with said rod, said sleeve having an inner surface;

forming a crankshaft having two shoulders on the offset crankpin portion thereof for defining a race portion therebetween;

machining said race portion;

wrapping a strip of rollers about said machined race portion; and

passing the sleeve over the crankshaft and the rollers for concentric alignment with the rollers and race portion;



whereby the rollers are confined by the race portion of the crankshaft, the inner surface of the sleeve and the shoulders of the crankshaft.

4,494,287

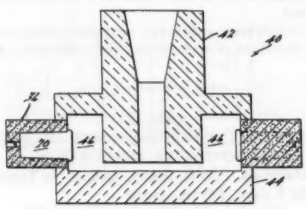
METHOD OF MANUFACTURING A TURBINE ROTOR

Gerald S. Cruzen, Gregory; Said Izadi, Walled Lake, and Peter Nagy, West Bloomfield, all of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Filed Feb. 14, 1983, Ser. No. 466,166

Int. Cl.³ B21K *3/04;* **B23P** *15/02, 15/04*

U.S. Cl. 29—156.8 R **3 Claims**



1. A method of making a turbine rotor comprising the steps of:

A. arranging in a circular orientation a plurality of blades having dovetails on the root portions at the radially inner ends thereof on an inner circular blade support that envelopes said dovetails,

B. filling the spaces between said blades outwardly of said root portions with a frangible material,

C. removing said inner blade support from said blade dovetails,

D. casting a metallic ring about said dovetails to fully encompass same,

E. removing said frangible material from about said blades,

F. machining the radially inner surface of said ring to expose a base of said root portions of said blades,

G. providing a diffusion bonding material on at least the inner surface of said ring and exposed blades or the outer surface of said hub,

H. assembling said ring and exposed blades on a central metallic hub, and

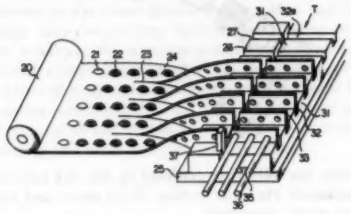
I. heating the assembled blades, ring and hub to effect diffusion of said bonding materials into said ring, exposed blade and hub.

4,494,288

METHOD OF PRODUCTION OF CROSS-FIN TYPE HEAT EXCHANGER

Teruhisa Nagai, and Takemi Naito, both of Yanai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 289,108
Claims priority, application Japan, Aug. 8, 1980, 55-108326
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A 6 Claims



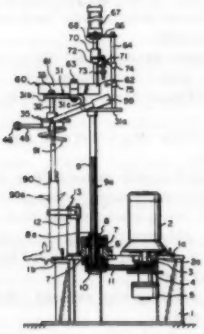
1. A method of producing a cross-fin type heat exchanger, the method comprising the steps of:
- forming a plurality of openings in a plate for accommodating a pipe therein,
- cutting said plate in a longitudinal direction into a plurality of strips of a width equal to a predetermined fin width
- twisting said plurality of strips through 90°,
- setting the the twisted strips on a jig in such a manner that the plurality of openings are aligned in a straight line and the strips are spaced apart from one another by a predetermined fin pitch,
- inserting a plurality of pipes in said openings in said strips in such a manner that each pipe extends through the openings in the adjacent strips set on the jig,
- securing said pipes to said strips so that the strips serve as fins, and
- cutting said strips in a direction perpendicular to the longitudinal direction at any desired time following the setting step.

4,494,289

COIL SPRING COMPRESSOR FOR ASSEMBLING AUTOMOTIVE SUSPENSION

Tsuyoshi Matsuura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 23, 1983, Ser. No. 468,873
Claims priority, application Japan, Mar. 17, 1982, 57-38439[U]
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—227 5 Claims



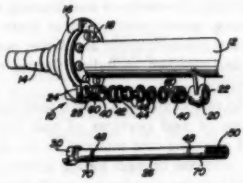
1. An improved coil spring compressor for use in the assembly of automotive suspension systems, said coil spring compressor being of the type in which a movable head plate is provided above a base for movement toward and away from said base to compress a coil spring mounted on a suspension strut which forms part of the suspension system to be assembled and which is secured to said base, wherein the improvement comprises:
- a pair of spaced guide bars connected to and pending from said movable head plate;
- a slidable carriage mounted on said guide bars for sliding movement; and
- a pair of compressing assemblies mounted on said carriage opposite with one another at both sides of said coil spring, each of said compressing assemblies comprising a pair of compressor arms pivoted to the carriage and provided, respectively, with a finger mount at the inner free end thereof, compressing finger assemblies adjustably attached to the corresponding finger mounts, and means for independently adjusting relative positions of the finger assemblies to the associated finger mounts, one of said compressor arms being provided with an operating handle, said compressor arms being interconnected with each other so that on actuating said one arm by said handle the finger assemblies on both arms conjointly extend toward the coil spring to engage between any desired successive turns of the coil spring.

4,494,290

SPLIT BUSHING AND TOOL KIT

Seth E. Rutledge, P.O. Box 3311, St. Petersburg, Fla. 33731

Filed Dec. 8, 1981, Ser. No. 328,679
Int. Cl.³ B25B *27/14, 9/02;* F16C *33/04*
U.S. Cl. 29—280 2 Claims



1. In combination with vehicle brake operating mechanism including a shaft journaled from a pair of spaced supporting journals in the form of bosses each of which receives replaceable bushing, a longitudinally split bushing received in each boss and being axially inserted therein and removed therefrom by axial movement on the shaft, each bushing being constructed of plastic material sufficiently resilient and pliable when heated to enable the split bushing to be spread apart for lateral assembly of the bushing onto the shaft or lateral removal therefrom without removing the shaft from the bosses, a tool for connection with the end of the bushing for removing it axially from the boss, said bushing including a pair of axially converging sockets in an end edge thereof, said tool including a pair of converging fingers movable toward and away from each other to enable engagement with the sockets and means on the tool to retain the fingers in adjacent relations to lock them in the sockets thereby rigidly connecting the tool to the bushing, said sockets being in the form of inwardly converging blind bores communicating with the end edge of the bushing in circumferentially spaced relation to each other and with both sockets being on the same side of the longitudinal split in the bushing, said tool including a generally U-shaped wire member terminating in said inwardly converging fingers having the same angle of convergence as the sockets, said finger retaining means including a sliding band on the U-shaped wire member for movement toward the fingers when the fingers are engaged with the sockets thereby locking the fingers in the sockets with

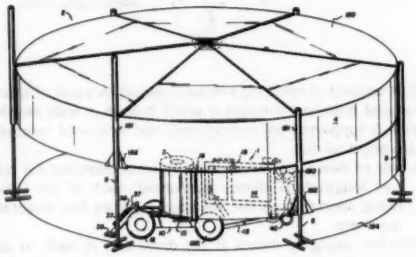
the tool extending axially of the bushing and parallel to the shaft for exerting axial force on the bushing when removing the bushing from the boss or inserting the bushing into the boss.

4,494,291

APPARATUS FOR CONSTRUCTING CYLINDRICAL STORAGE TANKS

Alex J. Morrison, R.R. 1, Gibbons, Alberta, Canada (T0A 1N0)

Filed Jun. 15, 1981, Ser. No. 273,764
Int. Cl.³ B23K *31/02*
U.S. Cl. 29—281.4 **22 Claims**



1. An apparatus for constructing cylindrical tanks from coiled strip steel, wherein the tank walls are constructed at substantially ground level and are vertically supported on a support structure, comprising:

a wheeled frame assembly comprising a chassis frame attached to the wheels and a pivoting frame pivotally mounted on the chassis frame for both side-to-side and forward-to-back tilting movement relative to the chassis frame;

means for so pivoting the pivoting frame;

a turntable assembly, rotatably mounted on the pivoting frame, for substantially vertically supporting the coiled strip steel; and

fitting frame means, mounted on the pivoting frame for movement therewith and positioned to receive the strip steel from the turntable assembly, for substantially vertically supporting and guiding the strip steel into alignment with the tank wall expected to be supported thereabove.

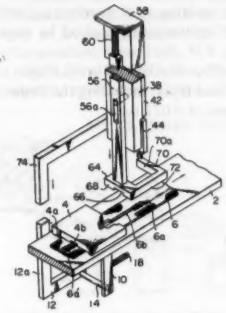
4,494,292

METHOD FOR SECURING BOTTOM END STOP TO FASTENER CHAIN

Yoshiyuki Toishi, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,514
Claims priority, application Japan, Dec. 29, 1981, 56-214770
Int. Cl.³ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—408 **3 Claims**

1. A method for securing a bottom end stop to an indefinite length of fastener chain including alternating engaged fastener element portions and space portions where fastener elements are removed, comprising the steps of feeding said indefinite length of fastener chain in a longitudinal direction, protruding a chain stopper into each space portion downstream of one of said fastener element portions as the fastener chain is being fed to arrest the move of the fastener chain as said engaged element portion upstream of said space portion abuts said chain stopper, passing said engaged element portions through a guide means adjacent said chain stopper for slidably engaging the opposed lateral side edges of the engaged fastener elements to prevent fastener element separation upstream of said chain stopper, resiliently pressing down on one of said space portion or element portion downstream of said space portion with an element stopper means, pulling said chain stopper out of said space portion to thereby allow the fastener chain to move in said longitudinal direction until said engaged element portion upstream of said space portion abuts against a stop wall of said element stopper, and securing a bottom end stop to the end of



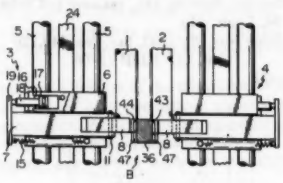
said engaged element portion upstream of the space portion adjacent said stop wall while said fastener chain is prevented from moving.

4,494,293

METHOD AND APPARATUS FOR ATTACHING PIN FITTINGS TO SLIDE FASTENER HAVING SEPARABLE END STOP

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,565
Claims priority, application Japan, Jul. 10, 1982, 57-120180
Int. Cl.³ B21D *53/50*; A41H *37/06*
U.S. Cl. 29—408 **4 Claims**



1. A method of attaching pin fittings to a slide fastener having a separable end stop, comprising holding a pin fitting for a pin or box pin by a pin fitting holder, moving a stringer tape gripped by a gripper for introducing a core portion of the tape into said pin fitting, and deforming said pin fitting to secure it to said core portion, characterized in that a first fastener element of a fastener element row affixed to said stringer is abutted against an end portion of the pin fitting under pressure, whereby said core portion is positioned when inserted into said pin fitting.

4,494,294

METHOD OF MANUFACTURE OF HYDRAULIC CYLINDERS UTILIZING BRONZE OVERLAYS FOR ENGAGING SURFACES

James O. Sims, Rte. #2, Box 246, Hartselle, Ala. 35640

Continuation of Ser. No. 310,630, Oct. 13, 1981, Pat. No. 4,435,893. This application Jul. 11, 1983, Ser. No. 512,537
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ B23P *17/00, 15/00*
U.S. Cl. 29—412 **9 Claims**

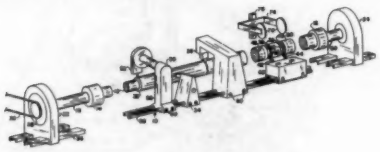
1. The process of manufacturing components of a fluid-operated cylinder, which cylinder comprises a pair of circular

members, an outer, hollow, bearing member and an inner piston member, including the following steps:

rotating a cylindrical steel member about its central axis;

fusing onto the rotating steel member a continuous layer of bronze, said bronze being applied by deposition from a bronze wire;

monitoring the thickness of said bronze layer and controlling the depth of said layer, including the deposition to a minimum thickness of 0.031 inch;



machining the surface of said bronze layer to a selected diameter and finish; and

cutting a series of spaced grooves through said bronze layers into the steel of said steel member, said grooves being cut to selected depths and widths;

whereby a discrete one of said circular members of a said cylinder is fabricated.

4,494,295

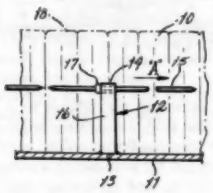
METHOD OF INSTALLING FURNACE WALL LINING

Thomas M. Herring, Ballwin, Mo., assignor to Christy Firebrick Company, St. Louis, Mo.

Filed Nov. 29, 1982, Ser. No. 445,210

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432 **10 Claims**



1. A method of installing ceramic fiber modules in a shell comprising the steps of:

(a) attaching in a predetermined pattern a plurality of brackets to an inside wall of the shell so as to define a series of spaces to receive ceramic fiber modules, each of the brackets having one end attached to the shell and a guide formed on the free end,

(b) placing a ceramic fiber module into the space defined between adjacent brackets so as to project into the interior of the shell area a greater distance than the bracket guide,

(c) inserting retaining means through one of said bracket guides into the body of said module contained between said adjacent brackets such that a portion of said retaining means remain in the space between said one bracket and the next adjacent bracket, and

(d) placing a second ceramic fiber module into said latter space and impaling the same on the portion of said retaining means remaining in said space.

4,494,296

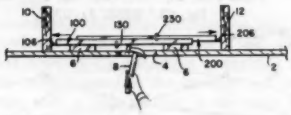
FIXTURE SUPPORT INSTALLATION METHOD

Fred K. Grimes, Tallahassee, Fla., assignor to Lance Austin Enterprises, Inc., Tallahassee, Fla.

Division of Ser. No. 344,008, Jan. 29, 1982, Pat. No. 391,428, which is a continuation-in-part of Ser. No. 321,630, Nov. 16, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,770

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432 **6 Claims**



1. A method of installing a fixture support on a pair of spaced structural members through a small hole in a wall member which is supported on and conceals the structural members, and support having:

a pair of elongated lances slidably interconnected for relative longitudinal sliding movement, each of the lances being shorter than the distance between the structural members;

member engaging means at the distal end of each of said lances for engaging the structural members and supporting the lances thereon when the lances are driven longitudinally in opposite directions against the structural members; and

striking means associated with said lances intermediate the ends thereof;

the method comprising the steps of:

inserting said interconnected lances through said hole into the space behind said wall member and between said structural members;

orienting said lance transversely of said structural members;

extending said lances until the member engaging means of each lance abuts its respective structural member; and

inserting a striking tool through sale hole and striking the striking means associated with said lances with said tool in longitudinally opposite directions to force said member engaging means into engagement with said structural members.

4,494,297

METHOD OF PRODUCING CASTINGS WITH MEANS TO FACILITATE BURR REMOVAL

Sten Larsson, Eskilstuna, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 29, 1982, Ser. No. 427,305

Claims priority, application Sweden, Oct. 6, 1981, 8105884

Int. Cl.³ B22D *11/126, 11/128*

U.S. Cl. 29—527.6 **7 Claims**

1. In a method of producing a metal casting which comprises the steps of employing a casting mold having two mold sections contacting one another along a parting line, pouring a solidifiable melt into said mold, allowing the solidifiable melt to solidify into a metal casting, removing the solidified metal

casting from said mold, said solidified casting including a first undesired burr thereon, and then removing said first undesired burr from said casting, the improvement wherein at least one of said mold sections is shaped in the vicinity of said parting line so that, in a first region of the casting that solidifies within said parting line, said first undesired burr is produced in a form which includes a first substantially uninterrupted flange projecting outwardly from said region of the casting, and wherein said step of removing said first undesired burr from said casting includes removing said first flange and thus said first undesired burr from said casting by employing an industrial robot to effect relative movement between said first flange and a flange-removing means.

4,494,298

AUTOMATIC ASSEMBLING APPARATUS

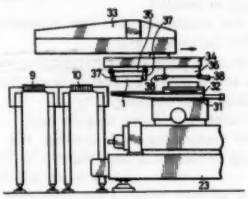
Tamiaki Matsuura; Takeshi Aiba; Takashi Fukushima; Masanori Nishimura; Hiroshi Ohtsuki, all of Kanagawa; Fujio Yabuki, Saitama, and Tomio Kusakabe, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,997

Claims priority, application Japan, May 23, 1981, 56-78335

Int. Cl.³ B23Q *7/04*; B23B *13/00*

U.S. Cl. 29—563 **10 Claims**



1. An automatic assembling apparatus comprising:

first and second parallel conveyer means for each independently transferring at least one carrier means in a first direction;

assembly station means located alongside said conveyer means and including movable table means and work means by which various assembling operations are performed with respect to said at least one carrier means while the latter is on said table means; and

carrier loading means movable between a first position in opposing relation to said movable table means and a second position in opposing relation to said conveyer means, said carrier loading means including first and second chucking means in opposing relation to said first and second parallel conveyer means, respectively, when said carrier loading means is at the second position for each slelectively picking up and releasing said at least one carrier means on the respective conveyer means and in opposing relation to said movable table means of the respective assembly station means when said carrier loading means is at the first position for each selectively picking up and releasing said at least one carrier means on said movable table means.

4,494,299

METHOD OF MANUFACTURING SOLID ELECTROLYTIC CAPACITORS

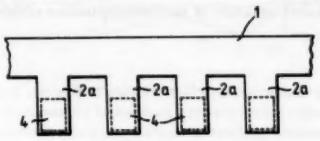
Robert W. Franklin, Paignton, and Peter F. Briscoe, Littlebury Green, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,622

Claims priority, application United Kingdom, Dec. 1, 1981, 8136165

Int. Cl.³ H01G *9/00*

U.S. Cl. 29—570 **4 Claims**



1. A method of manufacturing electrolytic capacitors comprising the steps of:

forming groups of elongate formations each having a plurality of teeth distributed along its length on a substrate of a valve metal;

applying a layer of a valve metal powder to one side of each of the teeth;

sintering the valve metal powder to form a valve metal layer;

anodizing the substrate and the metal layer to form a dielectric film;

separating each of the groups from the substrate;

manganizing the respective groups of formations at a predetermined region of each of the teeth;

immersing part of the teeth into a bath of conductive material to form a first termination thereon;

turning the respective groups so that the teeth extend in a direction opposite to that assumed during said immersing step;

immersing a portion of the remainder of each of the groups into a bath of a conductive material to form a second termination thereon to such an extent to leave a gap between the terminations; and

filling the gap with an insulation material.

4,494,300

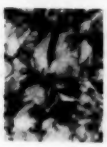
PROCESS FOR FORMING TRANSISTORS USING SILICON RIBBONS AS SUBSTRATES

Guenter H. Schwuttke, and Kuei H. Yang, both of Poughkeepsie, N.Y., assignors to International Business Machines, Inc., Hopewell Junction, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,148

Int. Cl.³ H01G *7/00*; H01L *11/14*

U.S. Cl. 29—571 **5 Claims**



1. A process of forming a semiconductor monolithic structure comprising:

providing a semicrystalline ribbon of silicon having a thick-

ness substantially less than 0.5 millimeters and having a suitable defect structure which favors strain-induced recrystallization;

thermally forming a silicon dioxide layer on a surface of said ribbon;

forming an active device layer of polysilicon over said oxide layer; and

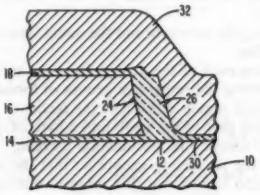
annealing said polysilicon layer to induce localized melting and recrystallization of said polysilicon layer whereby uniform crystals of larger grain size than those initially formed are effected in the polysilicon layer due to said defect structure in said semicrystalline ribbon.

4,494,301

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH MULTI-LEVELS OF POLYCRYSTALLINE SILICON CONDUCTORS

Lorenzo Faraone, Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,451
Int. Cl.³ H01L *21/90*
U.S. Cl. 29—571 **8 Claims**



1. A method of making a semiconductor device having multi-levels of polycrystalline silicon conductors comprising the steps of

(a) forming on the surface of a substrate of single crystalline silicon a first layer of silicon oxide,

(b) forming on said first silicon oxide layer a first layer of polycrystalline silicon,

(c) forming on said first polycrystalline silicon layer a second layer of silicon oxide,

(d) forming on said second silicon oxide layer an oxidation resistant masking layer,

(e) removing portions of said masking layer, second silicon oxide layer and first polycrystalline silicon layer to define the first polycrystalline silicon layer and provide it with at least one exposed side edge,

(f) subjecting the device, with unremoved portions of said masking layer remaining over unremoved portions of said second silicon oxide layer, to heat and oxygen to thermally grow a silicon oxide layer over the exposed side edge of the defined first polycrystalline silicon layer,

(g) separately from step (f) providing a third layer of silicon oxide of a desired thickness on a portion of said surface of the substrate adjacent said side edge of the first polycrystalline silicon layer, and

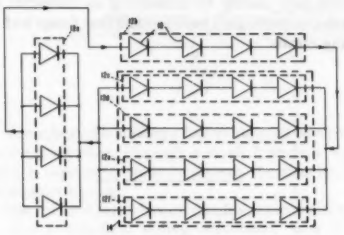
(h) forming a second layer of polycrystalline silicon on the second silicon oxide layer to overlap the first polycrystalline silicon layer, on the silicon oxide layer over the side edge of the first polycrystalline silicon layer and over the third silicon oxide layer to overlap a portion of said surface of the substrate.

4,494,302

ACCELERATED ANNEALING OF GALLIUM ARSENIDE SOLAR CELLS

Ronald C. Knechtli, Woodland Hills; Robert Y. Loo, Los Angeles, and G. Sanjiv Kamath, Malibu, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 246,360, Mar. 23, 1981, Pat. No. 4,395,293.
This application May 16, 1983, Ser. No. 494,610
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—575 **4 Claims**



1. Apparatus for annealing out radiation damage effects in GaAs solar cells in a panel comprising a plurality of n solar cells exposed to solar radiation, which comprises:

(a) means for forming a number m of identical sections, each containing n/m solar cells;

(b) means for providing a forward bias current to one section, said means comprising

(1) means for combining m−2 sections in a group such that the solar cells in each section are connected in series and the sections are connected in parallel, leaving said one section and one remaining section,

(2) means for combining the solar cells of the one remaining section in parallel,

(3) means for combining the one remaining section in series with the group, and

(4) means for combining the one remaining section and the group in series with said one section, thereby forming an annealing combination;

(c) means for heating said one section; and

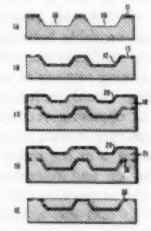
(d) means for reforming and cycling the combination through each of the other sections.

4,494,303

METHOD OF MAKING DIELECTRICALLY ISOLATED SILICON DEVICES

George K. Celler, New Providence, N.J.; David J. Lischner, Salisbury, Pa., and McDonald Robinson, Chester, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 480,825
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—576 W **9 Claims**



1. A process for producing dielectrically isolated electronic

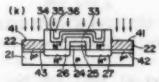
devices in a semiconductor body comprising single crystal silicon, comprising the steps of depositing a layer of silicon on a dielectric material and converting said deposited silicon layer into a single crystal silicon region, CHARACTERIZED IN THAT said dielectric material is at least 1 μm thick and is formed on the surfaces of a cavity in said semiconductor body, said deposited silicon extends continuously to a single crystal silicon nucleation region and said conversion to said single crystal silicon region is effected by first melting all of said deposited silicon layer to form a molten region extending to said single crystal nucleation region and then inducing recrystallization.

4,494,304

FORMING CHAN-STOPS BY SELECTIVELY IMPLANTING IMPURITY IONS THROUGH FIELD-OXIDE LAYER DURING LATER STAGE OF MOS-DEVICE FABRICATION

Kentaro Yoshioka, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,584
Claims priority, application Japan, Mar. 4, 1983, 58/34426
Int. Cl.³ H01L *21/265, 29/78*
U.S. Cl. 29—578 **7 Claims**



1. A method of manufacturing a MOS type semiconductor device comprising the steps of:

forming a relatively thick oxide film on a semiconductor substrate;

removing a portion of said oxide film to expose a portion of said semiconductor substrate which is used to form an active region;

forming a polycrystalline silicon gate electrode on said exposed portion of said semiconductor substrate;

forming diffused layers being of a conductivity type opposite to that of said semiconductor substrate in said exposed portion thereof;

forming an oxide film on said polycrystalline silicon gate electrode;

depositing a polycrystalline silicon film, a silicon nitride film and a resin film on said polycrystalline silicon gate electrode to form a flat surface such that the flat surface of the active region would lie at a level lower than an upper surface of said relatively thick oxide film;

etching off said relatively thick oxide film to have a predetermined thickness by utilizing said polycrystalline silicon film, said silicon nitride film, and said resin film as a mask;

implanting ions of an impurity into said semiconductor substrate to form channel stop layers;

and

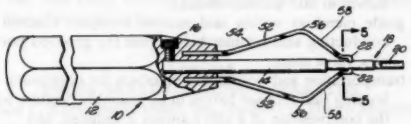
exposing said polycrystalline silicon film on said diffused layers to form electrodes.

4,494,305

CONTACT EXTRACTION TOOL

Sohrab Safai, Irvine, Calif., assignor to International Business Machines Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,644
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—764 **9 Claims**



1. A contact extraction tool for use in a connector with a contact that is releasably lockable in a bore within a connector body by a resilient retention element extending between the wall of said bore and said contact, said tool comprising:

a handle and a forward portion having a tubular tip section to be inserted into said bore over said contact to release said retention element from its locking position, said forward portion including a hollow section behind said tip section;

an opening in the wall of said hollow section; and

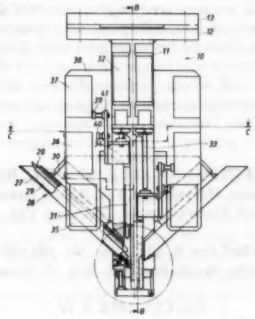
contact gripping means having a manual actuating section outside of said forward portion between said handle and said hollow section, said gripping means having a forward jaw movable laterally through said opening toward one side of said hollow section to firmly grip the contact therebetween when said actuating section is engaged by an operator and while the tip section is releasing said retention element.

4,494,306

TOOL FOR ASSEMBLY OF HALVES OF A VALVE STEM KEY FOR RETAINING VALVE SPRINGS

Kari Immonen, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Dec. 23, 1982, Ser. No. 452,718
Claims priority, application Sweden, Dec. 28, 1981, 8107789
Int. Cl.³ B23Q *7/10*
U.S. Cl. 29—809 **5 Claims**



1. A tool for the automatic assembly of the two halves of a grooved split valve stem key around a grooved valve stem and within the bore of a washer retaining a valve-closing spring in a combustion engine, characterized in that the tool comprises

connecting means for connecting the tool to a carrying member,

a rod extending from said connecting means,

said rod provided with a pressure element intended for compression of a valve spring,

magazines carried by said rod for a number of retainer halves for cooperating with the valve stem key,
a first channel in connection with said magazines for transporting said retainer halves from the magazines,
said rod provided with means forming a second transport channel in connection with said first transport channel for transporting said halves to an assembly position,
stop means for temporarily retaining a pair of said retainer halves in said second channel,
guide members within said second transport channel for conducting said retainer halves past the grooved portion of a valve stem,
transportation and positioning members for positioning and holding said retainer halves in an assembly position while the compression of a valve spring is reduced, and
operating means upon said rod for operating said transportation and positioning members.

4,494,307

METHOD OF MANUFACTURING ELECTRIC CABLE HAVING COMPRESSED MINERAL INSULATION AND A TITANIUM SHEATH

Jean-Claude Bourget, Issy-les-Moulineaux, France, assignor to Les Cables de Lyon, Clichy, France

Filed Jan. 4, 1983, Ser. No. 455,630
Claims priority, application France, Jan. 8, 1982, 82 00176
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—825 **5 Claims**

1. A method of manufacturing electric cable by interposing a compressed mineral oxide insulation between a titanium sheath and at least one titanium inner conductor and reducing the diameter of the cable so constituted, the improvement comprising:
preparing a titanium sheath preform whose diameter is very much greater than that of the finished cable,
then lengthening the preform by successive mechanical deformation operations and performing annealing operations on the preform between said mechanical deformation operations, and wherein the preform is lengthened by about 35% between successive annealing operations;
wherein the titanium used contains not more than: 0.03% nitrogen; 0.25% oxygen; 0.015% hydrogen; 0.10% carbon and 0.30% iron;
wherein its tensile strength is not more than 540 N/mm^2,
wherein its breaking strain is at least 22%, and wherein said annealing operations are performed in a rare gas atmosphere at a temperature lying between 600° C. and 640° C. and wherein each annealing operation is equivalent to that annealing obtained by heating a Grade 2 titanium sheath prefrom within that temperature range for fifteen minutes duration, and whose preform diameter of 12.52 mm is reduced through successive lengthening steps to 3.20 mm.

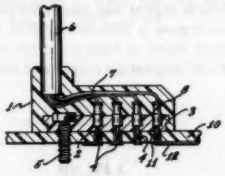
4,494,308

CONNECTING A CABLE TO A P.C. BOARD

Friedrich Schauer, Heroldsberg, Fed. Rep. of Germany, assignor to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,698
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129417
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—858 **3 Claims**

1. A method of connecting a multiconductor cable to conductors on a circuit carrier such as a printed circuit board comprising the steps of:
providing a mounting plate having a plurality of bores arranged in a pattern;
arranging solder pins in some of these bores and in a particular pattern involving a smaller number of pins than there are bores in the plate, the solder pins projecting from one side of the mounting plate;
fastening conductors of the cable to the pins on the respective other side of the plate;
molding a carrier element partially around said carrier plate thereby sealingly embedding the connection between the conductors of the cable and the soldering pins, but leaving the pins as projecting from the carrier plate exposed;



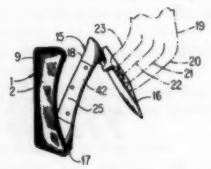
inserting the soldering pins in a pattern, of soldering sleeves in said circuit element carrier the pattern of sleeves matching the particular pattern of said pins;
soldering the pins and the sleeves to each other, thereby completing the electrical connections between the conductors of the cables, and conductors on the circuit element carrier as connected on the board or carrier to the soldering sleeves.

4,494,309

EASY ACCESS KNIFE HOLDER

Robert A. Gray, Aiken, S.C., assignor to Robert Alan Gray Ltd., Aiken, S.C.

Filed Oct. 11, 1983, Ser. No. 540,405
Int. Cl.³ B26B *29/02*
U.S. Cl. 30—151 **8 Claims**



1. A holder for a knife comprising a blade secured within a knife handle comprising:
a. a base, sized and shaped to confrom with the bottom of said knife, upon which said bottom of said knife rests;
b. a rear portion, sized and shaped to conform with the back of said knife, secured to said base upon which said back of said knife may rest;
c. a first side portion, sized and shaped to conform with the first side of said knife handle, said first side portion secured to said base and said rear portion;
d. a second side portion, sized and shaped to conform with the second side of said knife handle, said second side portion secured to said base and said rear portion;
e. a first flexible portion forming the first front portion of said first side portion, flexed inward toward said second side portion; and
f. a second flexible portion forming the second front portion of said second side portion, flexed inward toward said first side portion, and separated from said first flexible portion by an open area,
whereby said first flexible portion and said second flexible portion are sized and shaped to press inward and to secure said knife within said holder, said first flexible portion pressing inward onto the first front side of said first side of said knife handle and said second flexible portion pressing inward onto the second front side of said second side of said knife handle,

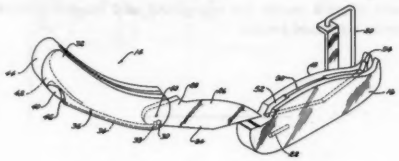
whereby said blade, the first front of said first side of said knife handle, and the second front of said second side of said knife handle are held within said open area by and between said first flexible portion and said second flexible portion of said holder, said blade easily accessible and utilizable for removing said knife from said holder.

4,494,310

BELT BUCKLE KNIFE

Richard L. Slaughter, Texarkana, Ark., assignor to Slaughter Knife Co., Inc., Texarkana, Tex.

Filed Sep. 13, 1982, Ser. No. 417,344
Int. Cl.³ B26B *1/04, 11/00, 29/02*
U.S. Cl. 30—155 **5 Claims**



1. A belt buckle knife adapted to engage and fasten a belt, comprising:

a knife structure having a blade member comprising a blunt edge and sharp edge, and a handle member operable between a knife closed position and a knife open position in which said blade member and said handle member are locked relative to each other, and when in the closed position the sharp edge of the blade member is enclosed by the handle member and a portion of the blunt edge is exposed along its length, and

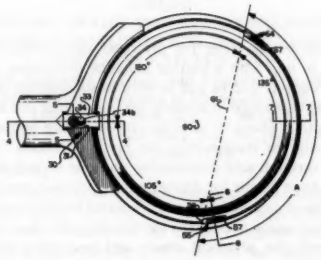
a buckle structure adapted to engage and fasten a belt, the buckle structure engaging the exposed blunt edge of the blade member to fasten the knife structure and buckle structure together.

4,494,311

MEAT TRIMMING KNIFE

Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089

Filed Oct. 13, 1982, Ser. No. 434,128
Int. Cl.³ B26B *7/00*
U.S. Cl. 30—276 **10 Claims**



1. An improved meat trimming knife including:

(a) a handpiece having a concavely shaped front end and a handle extending in a generally radial direction rearwardly from said front end;

(b) a ring-shaped blade holder adapted to be mounted on the concave front end of the handpiece;

(c) a ring-shaped cutting blade adapted to be rotatably mounted on the blade holder;

(d) a locking key slidably mounted in a complementary shaped keyway formed in the handpiece for releasably retaining the cutting blade on the blade holder;

(e) means operatively engaged with the locking key for locking said key in the blade retaining position; and

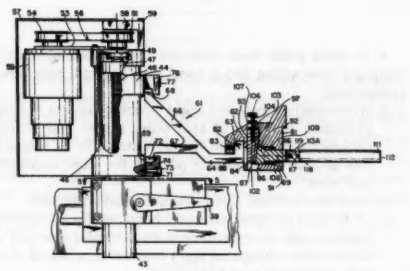
(f) tab means formed integrally on the blade holder for releasably holding the cutting blade on the blade holder, with said tab means having an arcuate length of less than 160° and being shaped a predetermined arcuate distance from the locking key.

4,494,312

PRESS BRAKE GAUGING APPARATUS

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Co., Inc., Indianapolis, Ind.

Filed Sep. 7, 1982, Ser. No. 415,429
Int. Cl.³ B21D *11/22*
U.S. Cl. 33—170 **18 Claims**



1. A workpiece locating finger assembly for gauging apparatus for presses and the like, and comprising:

a mounting bracket;

a workpiece abutment finger;

a finger mounting member having a base portion received on said bracket and having a connector portion adjacent said bracket;

said finger having a proximal portion pivotally connected to said connector portion;

adjustment means on said bracket and engaging said mounting member,

said adjustment means including a wedge in stop relationship to said base portion of said mounting member;

and resilient means received on said bracket and urging said mounting member into engagement with said adjustment means.

7. A workpiece locating gauge assembly for presses having tooling thereon, the gauge assembly comprising:

frame means mountable to a press and said frame means having elongate horizontally extending parallel guides thereon;

carriage means having bearing blocks thereon guidingly received on said guides whereby said carriage means are guided when driven horizontally toward and away from tooling on a press, each of said bearing blocks having a keyway therein extending parallel to the one of said guides on which the bearing block is guidingly received;

gauge mounting brackets having gauge bar receiving means thereon;

elevator means on said carriage means for raising and lowering said gauge mounting brackets and thereby raising and lowering said receiving means; and

elevator means mounting brackets keyed to said carriage bearing block keyways.

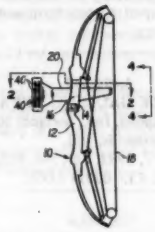
15. A gauge bar comprising:

an elongated member having a cross section resembling a letter Y lying on its side, and having an upturned flange at one side, a downturned flange at the lower arm of the Y on the other side, and an upturned flange at the upper arm of the Y on the other side.

4,494,313
THREE POINT BOW SIGHT

Doyce E. Scott, 899 Walnut, Lake Orion, Mich. 48035

Filed Jan. 31, 1983, Ser. No. 462,578
Int. Cl.³ F41G 1/46, 1/10
U.S. Cl. 33—265 7 Claims



1. A three point bow sight for fixed attachment to a bow having a bow string and a hand grip portion, said bow sight comprising:

a horizontally elongated sight bracket having a front end extending forward of said bow, a rear end terminating between said bow and the bow string in its relaxed position and an intermediate portion for fixed connection to said bow;

at least one vertical slot proximate said front end;

a tab formed integral with said horizontally elongated sight bracket, said tab extending normal to said rear end of said horizontally elongated sight bracket in a lateral direction with respect to said bow;

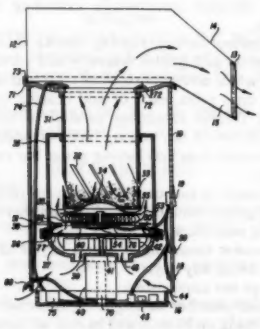
a "V" notch disposed in the top surface of said tab having an apex coplanar with the path defined by said bow string in its extended position; and

a plurality of sight pins disposed through said at least one vertical slot, each of said plurality of sight pins being offset vertically with respect to said "V" notch to designate a predetermined shooting range, one end of said plurality of sight pins lying in said plane defined by said bow string in its extended position such that said bow string, said apex of said "V" notch and said one end of said plurality of sight pins define a plane for sighting said bow.

4,494,314
COFFEE ROASTER

Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906

Filed Nov. 28, 1983, Ser. No. 555,659
Int. Cl.³ F26B 3/08, 17/10
U.S. Cl. 34—10 45 Claims



1. A coffee roaster, comprising:

an oven chamber in the form of a vertical cylinder, closed at the bottom and opened at the top and including means for admitting forced air comprised of a plurality of openings in the lower portion of the cylindrical wall of said oven chamber, each of said openings dimensioned and positioned in said oven chamber wall so that said forced air entering therethrough flows in a circular path within said oven chamber and about the vertical axis of said oven;

blower means for generating said forced air at a flow rate which will create a fluidized bed of a charge of coffee beans in said oven chamber;

heater means for heating said forced air prior to its entering said oven chamber;

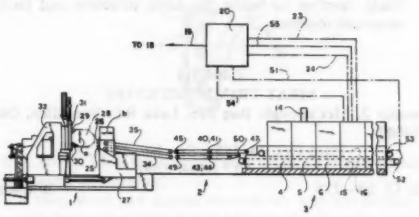
heater control means for turning said heater on at the beginning of a roasting cycle and off when the coffee bean charge has reached a desired degree of roast; and

blower control means for energizing said blower concurrently with said heater.

4,494,315
CONTINUOUS DRIER FOR PLYWOOD SHEETS

Friedrich Roos, Hauneck, and Friedrich Bahner, Rotenburg, both of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft Vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,832
Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120917
Int. Cl.³ F26B 21/10
U.S. Cl. 34—48 6 Claims



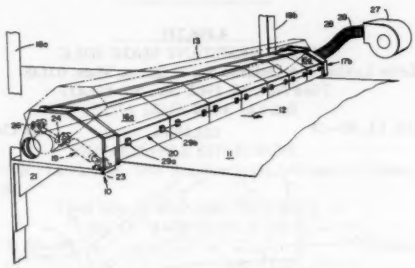
1. A continuous drier for plywood sheets adapted to be arranged in line with a cutting machine producing plywood sheets of various widths and in various successions, said drier comprising an elongated housing having an inlet end and being divided into a plurality of consecutive drying sections; conveyor means for transporting the plywood sheets from said inlet end through said consecutive sections of said elongated housing; drive means for driving said conveyor means with a variable speed; heating means, a ventilator for blowing air over said heating means and means for directing the thus produced hot air onto the plywood sheets and permitting transverse passage of the spent air over the plywood sheets in each of said sections; sensing means upstream of said inlet end of said housing for measuring the width and the spacing of said plywood sheets entering said housing; and control means in circuit with said sensing means and said drive means for regulating the speed of the conveyor means to assure a close succession of said plywood sheets on said conveyor means and for regulating the volume of the stream of hot air and/or the temperature of the latter in dependence upon the speed of said conveyor means.

4,494,316

APPARATUS FOR DRYING A MOVING WEB

Erik Stephansen; Rajeeva Sharma, both of San Jose, and Michael Richie, Santa Cruz, all of Calif., assignors to Impact Systems, Inc., San Jose, Calif.

Filed Mar. 14, 1983, Ser. No. 475,125
Int. Cl.[3] F26B *23/04*
U.S. Cl. 34—68 12 Claims



1. Apparatus for drying a moving web comprising:
an elongated structural member having a length at least as great as said web in a transverse cross-direction and forming the main structural support for said drying apparatus;
a plurality of dryer modules;
support means for receiving said dryer modules in a side-by-side relationship and for replaceably supporting them in positions across said web to dry said web, said support means being cantilevered from and fixed to said member;
fixed support means for rotatably supporting said structural member at both ends including means therein for rotating said dryer modules into and out of proximity to said web;
forced air cooling means said support means forming an enclosed structure that carries cooling air to said dryer modules and including a blower attached to said support means for providing said cooling air;
each of said dryer modules including a plurality of spaced, parallel, heater elements in the form of glass tubes having their integral ends pinched flat with electrical conductors extending therefrom, and including a pair of retaining clips fastened to said flat ends, said flat ends and clips providing for free flow of said cooling air to cool said glass tubes.

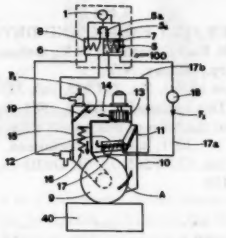
4,494,317

ACCESSORY DEVICE FOR REMOVING SOLVENT VAPOR IN MACHINES FOR DRY CLEANING GARMENTS AND THE LIKE

Gino Biagi, Calderara di Reno, and Vincenzo Fini, Sala Bolognese, both of Italy, assignors to Firbimatic S.R.L., Italy

Filed May 6, 1983, Ser. No. 492,413
Claims priority, application Italy, Jan. 24, 1983, 3314 A/83
Int. Cl.[3] F26B *21/06*
U.S. Cl. 34—73 2 Claims

1. Apparatus for removing solvent vapor in machines for dry cleaning garments and the like, in which said machines are provided with a closed drying circuit comprising a washing tank, a filter, and a surface condenser for the recovery of the solvent vapor, said condenser including tube means, pipe means connected to said tube means for delivering and discharging a fluid circulating therein, a fan, a heater, and a deodorizing circuit formed with two apertures by which said machine communicates with said apparatus, one of which apertures supplies air to said machine and the other of which apertures discharges a mixture of air, solvent vapor and water from said machine, said deodorizing circuit comprising said washing tank, said filter and said fan; and said apparatus comprising:
a refrigeration circuit including at least two distinct evaporators connected in parallel,
a pair of cut-off valves interlocked to the operating cycle of the dry cleaning machine and respectively connected to said evaporators,
a pair of jackets respectively enclosing said evaporators, a first of said jackets being connected to said pipe means so



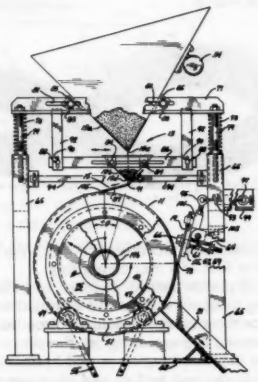
as to define a first closed circuit for supplying the tube means with said fluid and for cooling said fluid in said first jacket, the second of said jackets being connected to said apertures so as to define with said deodorizing circuit a second closed circuit and also to enable cooling of the mixture of gases passing through said deodorizing circuit and condensing of said solvent vapor in said second jacket.

4,494,318

APPARATUS AND METHOD FOR MANUFACTURING CURED RESIN-COATED PARTICLES FOR USE AS A PROPPANT

John G. Smillie, Aurora, Ill., assignor to Aurora Industries, Inc., Montgomery, Ill.

Filed May 31, 1983, Ser. No. 499,369
Int. Cl.[3] D06F *58/00*
U.S. Cl. 34—112 12 Claims



1. An apparatus for curing resin-coated particles comprising:
a rotating surface for receiving uncured resin-coated particles on the rotating surface,
a feed mechanism which routes controlled amounts of the uncured resin-coated particles to said rotating surface in a manner to effect a single layer distribution of the particles,
means for softening and curing the resin-coated particles to the desired extent in less than one revolution by said rotating surface,
a drive mechanism for rotating said surface about its axis at

a rotational velocity such as to cause the softening and curing resin-coated particles to adhere to said rotating surface at a point in the rotation of said surface where the force of gravity would otherwise cause the particles to separate from the rotating surface, and

means for removing the resin-coated particles adhering to said rotating surface when the resin-coated particles are properly cured.

4,494,319

DRYER FELT FABRIC AND DRYER BELT

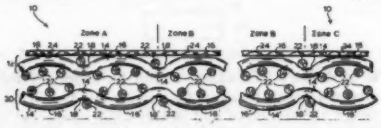
Robert J. Rudt, East Greenbush, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation of Ser. No. 288,973, Jul. 31, 1981, Pat. No. 4,426,795. This application Jul. 1, 1983, Ser. No. 509,930

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.³ F26B *13/08;* **D03D** *15/00*

U.S. Cl. 34—116 **2 Claims**



1. A dryer felt fabric for use in a dryer section, which comprises;

a flat woven dryer felt fabric having a substantially higher paper sheet contacting surface area per square meter at its center than along its lateral margins running in the machine direction.

4,494,320

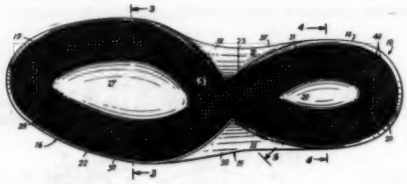
SHOE OUTSOLE

Howard F. Davis, New York, N.Y., assignor to 8-Track Shoe Corp., White Plains, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,754

Int. Cl.³ A43B *13/00, 13/04, 13/20*

U.S. Cl. 36—25 R **4 Claims**



1. An outsole for incorporation in a shoe or the like to be worn on the foot of a user comprising:

a generally shoe-shaped member of rubber-like material having an upper surface and a ground contacting bottom surface the ground contacting bottom surface having first and second depressed regions therein;

said first depressed region in said bottom surface being located in the real half of said shoe outsole and being of sufficient size to substantially encompass the heel of said user's foot for cushioning same upon ground impact, said first depressed region having a tapered sidewall such that said depressed region is wider at the ground contacting surface thereof than at the top for providing support to the heel of the foot sufficient to prevent excessive downward sagging thereof into said first depressed region upon ground impact;

said second depressed region in said bottom surface being located in the front half of said shoe outsole and being of sufficient size to substantially encompass the ball of said user's foot for cushioning same upon ground impact, said second depressed region having a tapered sidewall such that said depressed region is wider at the bottom thereof than at the top for providing support to the ball of the foot sufficient to prevent excessive downward sagging thereof into said second depressed region upon ground impact;

the ground contacting bottom surface surrounding said depressions and having a section extending therebetween for supporting the foot in the shank region.

4,494,321

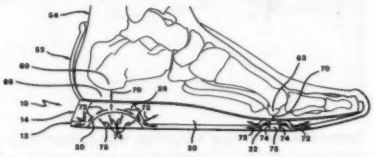
SHOCK RESISTANT SHOE SOLE

Kevin Lawlor, 2 A Oakland St., Brighton, Mass. 02135

Filed Nov. 15, 1982, Ser. No. 441,417

Int. Cl.³ A43B *13/20, 13/12*

U.S. Cl. 36—28 **12 Claims**



1. A shock absorbent shoe sole comprising:

(a) an upper sole having a thickness; and

(b) a bottom sole attached to the bottom of said upper sole and including one or more inverted cups dispersed therein, each cup being located directly beneath and pointed convexly toward a natural contact of the human foot for absorbing and dispersing shock generated at said natural contact point during a foot step, each of said cups including a cup shaped cavity penetrating the thickness of the upper sole to such a degree that the upper sole plays essentially no part in absorbing shock at the natural contact point during a footstep.

4,494,322

SHOE

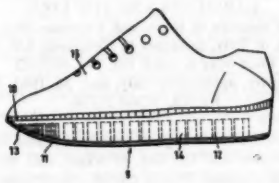
Josef Klagmann, Rastatt, Fed. Rep. of Germany, assignor to Golden Team Sportartikel GmbH, Weinheim, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,840

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136081

Int. Cl.³ A43B *13/16, 13/20*

U.S. Cl. 36—28 **14 Claims**



1. Shoe, comprising a relatively thin inner sole, an outer sole and an elastic intermediate sole disposed between said inner and outer soles, defining a tip, a heel, and regions accommodating the toes, the roots of the toes and the ball of the foot including a step point, said inner sole being substantially horizontal from the tip of the shoe to a location between the step point of the region accommodating the ball of the foot and the heel of the shoe, said intermediate sole having an upwardly tapered section from the region accommodating the roots of the toes to the tip of the shoe, said intermediate sole having multiplicity of

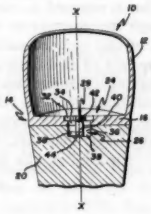
holes formed therein in the region accommodating the toes for additionally reducing the hardness of said intermediate sole in the region accommodating the toes, and said intermediate sole having other holes formed therein from the region accommodating the roots of the toes to the heel of the shoe, said other holes being less numerous and less concentrated than said first-mentioned holes in the region accommodating the toes.

4,494,323

DETACHABLE SHOE HEEL

Wendy R. Latraverse, 14B Mayberry Dr., Westboro, Mass. 01581

Filed May 3, 1982, Ser. No. 374,074
Int. Cl.³ A43B *21/36, 21/51*
U.S. Cl. 36—42 **6 Claims**



1. Shoe comprising:
(a) an upper portion,
(b) a sole attached to the upper portion, said sole having a heel portion which has a lower surface and an upper surface which is provided with a circular recess,
(c) a detachable heel having an upper surface for closely engaging said lower surface, said heel having a keyway which extends downwardly from the upper surface, and
(d) a retainer key mounted in the sole for rotation about a vertical axis and which is adapted to extend freely into the keyway when said upper and lower surfaces are properly engaged, said retainer key being complementary with said keyway so that rotation of the key about said vertical axis releasably locks the heel to the sole, said key having a head portion which is located in the recess so that it is below said upper surface, said head being elongated in the horizontal plane which enables the head to be grasped by the user's fingers within the recess for rotating the key about said vertical axis.

4,494,324

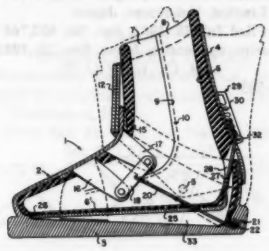
DYNAMIC INTERNAL FITTING SYSTEM WITH A MOVABLE FOOT BED FOR A SPORT SHOE

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 886,946, Mar. 15, 1978, Pat. No. 4,382,342. This application Jun. 20, 1979, Ser. No. 50,436
Int. Cl.³ A43B *5/04, 5/16*
U.S. Cl. 36—119 **15 Claims**

1. A sport shoe comprising:

means forming a movable foot bed located in the interior of said shoe for controlling foot movement in the shoe; and



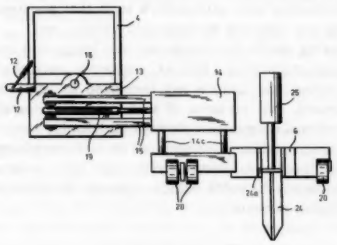
means responsive to a movement of the lower leg for moving said foot bed to tighten and loosen the fit of the shoe relative to said foot as said lower leg is moved.

4,494,325

SHRUB-LIFTING MACHINE WITH PISTON CONTROLLED ANCHOR

Pierre Berthollet, Cognin, France, assignor to Societe A.C.B., Cognin, France

Filed Oct. 7, 1983, Ser. No. 539,911
Int. Cl.³ A01G *23/06*
U.S. Cl. 37—2 R **18 Claims**

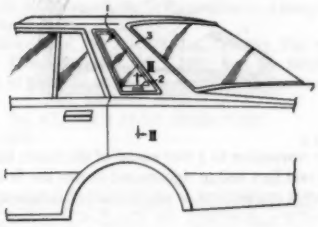


1. A machine for separating a plant with a root ball from the ground at a planting site, comprising:
a tractor having a three-point hitch;
a body mounted on said hitch and raisable and lowerable thereby;
a tool support carried by said body and having an opening adapted to receive a plant and a spade blade rotatable about said plant and adapted to penetrate the ground below said plant to cut the plant loose from the ground with a root ball;
guide means interconnecting said body and said tool support for relative longitudinal movement in a direction of displacement of said tractor to enable continued movement of said tractor in said direction upon halting of said tool support at said plant;
an anchor on said tool support engageable in the ground to halt said tool support at said plant;
a first fluid-operated cylinder connecting said body with said tool support to displace said tool support on said body opposite to said relative movement; and
a second fluid-operated cylinder connected with said anchor for driving it into and retracting it from the ground.

4,494,326
ELECTROLUMISCENT DISPLAY STRUCTURE FOR MOTOR VEHICLE WINDOW

Hiroshi Kanamori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 28, 1982, Ser. No. 402,764
Claims priority, application Japan, Sep. 29, 1981, 56-152968
Int. Cl.³ G09F 13/00
U.S. Cl. 40—593 13 Claims



1. A marking display structure for a motor vehicle window, comprising:

a light-permeable pattern provided on the inner surface of a glass membrane for a window of the motor vehicle;

illuminating means for illuminating said pattern, said illuminating means comprising a luminescent lamp which comprises a light-permeable electrode layer, a rear electrode layer, and a luminescent layer interposed between said light-permeable electrode layer and said rear electrode, said light-permeable electrode being disposed in facing relationship with said pattern such that portions of said lamp are viewable through said pattern; and

energizing means for energizing said lamp, said energizing means comprising a DC-AC converter, such that

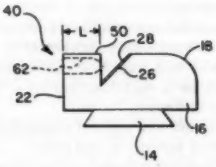
(a) when said lamp is not energized by said energizing means, said portions of said lamp are viewable with external illumination alone of said display structure, and

(b) when said lamp is energized by said energizing means, said pattern is illuminated by said lamp, whereby said pattern is viewable without external illumination of said display structure.

4,494,327
SIGHTING DEVICE FOR FIREARMS AND THE LIKE

W. Daniel Cullity, 209 Old County Rd., E. Sandwich, Mass. 02537

Filed Aug. 9, 1982, Ser. No. 406,206
Int. Cl.³ F41G 1/32
U.S. Cl. 42—1 S 16 Claims



1. A sighting device for use in combination with a firearm or other such equipment adapted to be sighted to a remote object, said device comprising:

A. a base member for mounting relative to the firearm or other such equipment;

B. an upstanding sight member projecting from said base member, said sight member including

i. a front end adapted to face forwardly toward the remote object when said device is mounted, and a rear end, and

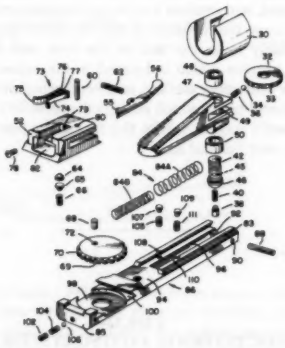
ii. a surface between said front end and said rear end of said sight member that is inclined so as to face upwardly of said base member and rearwardly of said front end of said sight member, said inclined surface having a finish that is reflective of ambient light so that light from above said device is reflected by said inclined surface rearwardly toward said rear end of said sight member, and

C. said rear end of said sight member defining at least one through aperture of circular cross-section defined by a first aperture defining portion located near said inclined surface and a second aperture defining portion located rearwardly of said first portion, said rear end being dimensioned such that it masks said inclined surface from view from the rear of said device except for a portion of said inclined surface that is exposed to view from the rear of said device through the aperture so that light reflected from that portion of said inclined surface passes through the aperture to the rear of said device, the first aperture defining portion having a diameter such that the reflected light passing therethrough defines a relatively sharp bead, and the second aperture defining portion having a diameter that is sufficiently larger than that of the first portion to minimize internal reflection of the light passing therethrough.

4,494,328
MOUNT FOR ATTACHING A DEVICE TO A FIREARM

Frederick G. Stevens, Bridgeport, Conn., assignor to Hydra Systems International, Inc., Bridgeport, Conn.

Filed Aug. 8, 1983, Ser. No. 520,893
Int. Cl.³ F41C 27/00
U.S. Cl. 42—1 A 7 Claims



1. A mount for attaching a device to a firearm comprising:

a longitudinal base adapted to carry the device to be mounted and having a track extending along a portion of the length thereof;

a block slidably mounted in said track;
spring means for biasing said block toward one end of said base;
first means mounted to said block for attachment to a first fixed member at one end of a firearm barrel; and
second means for attaching the other end of said base to a second fixed member at the other end of the firearm barrel;
whereby the device is mounted by attaching said first means to said first fixed member, sliding the base forward relative to said block until said second means is in a position to be attached to the second fixed member, aligning said second means with said second fixed member, and releasing said mount to cause the base to slide rearward with respect to the block in response to the biasing action of said spring means, thereby engaging said second means with said second fixed member;
said second means comprising;
a second block containing a notch adapted for mating engagement with a portion of said second fixed member, a pivoting lever arm with a tab extending into said notch to lock the second block onto said second fixed member, and;
a U-shaped spring member above said lever arm for engaging about a second fixed member.

4,494,329

ARRANGEMENT FOR DETERMINING THE PRESENCE OF A CARTRIDGE IN A CARTRIDGE CHAMBER OF A WEAPON

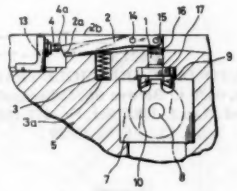
Lothar Post, Düsseldorf, and Bernhard Schneider, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,391

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239093

Int. Cl.³ F41C *27/12*

U.S. Cl. 42—1 D **4 Claims**



1. An arrangement for determining the presence or absence of a cartridge casing in a cartridge chamber of a weapon, in particular a machine cannon, comprising in combination,
a housing having a recess,
a lever pivotally mounted in said recess of said housing about an axis which is parallel to the gun barrel axis of the weapon, said lever having a first feeler arm which is adapted to extend into the cartridge chamber to thereby detect the presence of a cartridge casing in said cartridge chamber; and including a breech block operatively slidably mounted in said weapon, said breech block having a pocket, said lever having a second feeler arm, sensor switch means operatively mounted in said housing and adapted to coact with said second feeler arm, biasing means operatively mounted in said housing and biasing said second feeler arm away from said sensor switch means, whereby when a cartridge casing is seated in said cartridge chamber and the breech block is in the forwardmost operative position the edge of the bottom of the cartridge casing projects past the bottom of said pocket of said breech block thereby contacting said first feeler arm and pivotally biasing said second feeler arm against said sensor switch means against the action of said biasing means.

4,494,330

Patent Not Issued For This Number

4,494,331

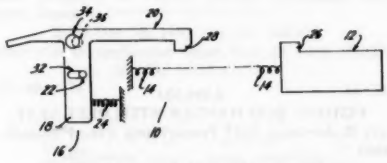
FIREARM SAFETY DEVICE

William E. Vanderbeck, Ridgefield Park, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1983, Ser. No. 459,740

Int. Cl.³ F41C *11/02*

U.S. Cl. 42—70 D **1 Claim**



1. A firearm safety device for an automatic firearm which comprises:
(a) means for operating the firearm; a first spring mounted at one end of said means for operating the firearm for urging longitudinal movement of the operating means, said longitudinal movement initiating firing of the firearm;
(b) sear means having a base with an oblong shaped slot therein, a freely rotatable arm pivotally mounted at the base, having a pivot pin along its vertical axis perpendicular to the direction of the movement of the arm and having one end of the arm in engagement with a mating surface of the operating means;
(c) a second spring at one end of the base controlling a horizontal movement of the sear means whereby the operating means is actuated by the movement of the horizontal arm of the sear means in order to cause firing of the firearm; and
(d) a safety pin aligned to a position relative to the movement of the pivot pin in said oblong slot so that the safety may be actuated only if the weapon is properly charged, the said arm moving under a force of the said second spring when the operating means is not actuated by the arm, said horizontal arm moving in an opposite direction under a force of said first spring when the operating means is actuated by said arm of the sear means.

4,494,332

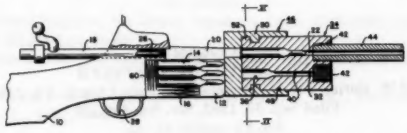
FIREARM CAPABLE OF FIRING DIFFERENT-SIZED CARTRIDGES

Michael Matievich, 380 Pennsylvania Ave., Wilmerding, Pa. 15148

Filed Mar. 31, 1983, Ser. No. 480,728

Int. Cl.³ F41C *1/00, 21/06, 21/12*

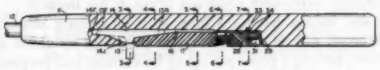
U.S. Cl. 42—77 **5 Claims**



1. In a firearm assembly having a cartridge receiver and means for moving cartridges sequentially from the cartridge

receiver into a firing chamber for sequential firing of the firearm, the combination for accommodating cartridges of different sizes comprising: a unitary firing chamber member having a plurality of parallel bores extending therethrough, each of said bores being adapted to receive a different-sized cartridge and each of said bores having means at its forward end for receiving a firearm barrel in alignment therewith, and said firing chamber member being adjustably carried on the firearm for positioning thereof with any selected one of said bores in alignment with the axis of the cartridge receiver whereby said selected one of said bores is effective as the firing chamber of the firearm.

4,494,333
FISHING ROD HANDLE WITH REEL SEAT
Hubert B. Jacobson, 1137 Pennsylvania Ave., Plymouth, Ind. 46563
Filed Jun. 16, 1983, Ser. No. 505,362
Int. Cl.³ A01K *87/06*
U.S. Cl. 43—22 **10 Claims**



1. A fishing rod handle with improved reel seat and comprising:

an elongate body member having a forward end and a rear end, said body member having a generally round cross section to facilitate gripping and holding in a hand, the forward end of the body member being adapted to receive a rod thereon;

an opening in the outer surface of said body member and communicating with a first cavity in the body member,

said first cavity extending in one direction from said opening;

a closure in said opening,

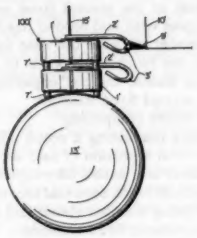
said closure including a slide portion and a handle portion, the handle portion being movable out of a position substantially flush with the said outer surface and into a position transverse to the longitudinal direction of said body member, to facilitate operation of said slide portion.

4,494,334
AUXILLIARY FISHING SINKER
Carl W. Porter, 315 N. Virginia Ave., Falls Church, Va. 22046
Filed Sep. 30, 1982, Ser. No. 429,235
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—43.12 **14 Claims**

1. For use with fishing apparatus including a weighted sinker for establishing a fishing depth and a line supporting the sinker from a support, an auxiliary sinker for positioning fishing line means on the sinker line at the fishing depth, comprising:

a body having a centrally located bore, and slot means extending from a peripheral location to said bore for loosely guiding said sinker line into said bore;

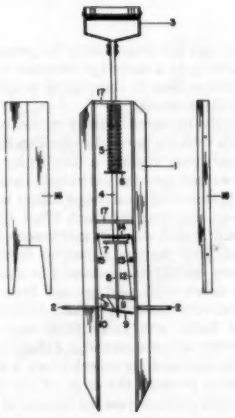
a core element having means for lockingly cooperating with the wall of the bore, and including means, cooperating with said bore wall, for loosely capturing said sinker line in said core, and



means, attached to and extending away from said core element, for coupling said fishing line means with said sinker line,

whereby upon guiding said sinker line through said slot into said bore and locking said core element in said bore, said auxiliary sinker is coupled to said sinker line and free to slide therealong to said fishing depth.

4,494,335
"AUTOMATIC SET" MOLE TRAP
Henry F. Gaines, 6430 E. Berwyn St., Indianapolis, Ind. 46203
Filed Mar. 1, 1983, Ser. No. 471,165
Int. Cl.³ A01M *23/30*
U.S. Cl. 43—80 **1 Claim**



1. A mole trap for placement over a tunnel in soil, said trap comprising, a frame having two parallel side members con-

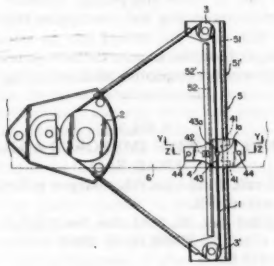
nected by spacers, said side members having sharp pointed lower ends for insertion into the soil on either side of said tunnel, each side member having a T-shaped cross section for providing lateral stability and stability against forward or backward motion, one spacer being located at and connecting the top of the side members and a second spacer connecting the side members closer to the center of the length thereof; a leveling wing attached to each side member and extending from the side thereof for inserting and locating the trap in a position in relation to the grade level of the soil; a spring powered plunger slidably mounted for vertical movement through said spacers and having an in-line plunger head attached thereto, a plurality of spaced spikes attached thereto, a plurality of spaced spikes attached to said plunger head and aligned in side-by-side relationship with the direction of the tunnel; a trigger mechanism having a pivoted trigger located at said grade level, a trigger arm, a setting spring for automatically setting the trigger mechanism by biasing the trigger arm to engage and hold the plunger head when elevated to a set position, and a connecting rod between the trigger and said trigger arm for causing the trigger arm to release the plunger head upon actuation of the trigger by a mole traveling through said tunnel; and protective shields extending between the side member for enclosing the trigger mechanism for protection to persons near the trap particularly while the trap is in the set position.

4,494,336

WIRE-TYPE DOOR WINDOW REGULATOR FOR AN AUTOMOTIVE VEHICLE

Kinichi Ishii, Yokohama, and Yoshiharu Araki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Johnan Seisakusho, Japan

Filed Sep. 29, 1982, Ser. No. 427,573
Claims priority, application Japan, Jan. 19, 1982, 57-6224
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—352 **6 Claims**



1. A door window regulator to which moves a window pane upwardly and downwardly relative to a door inner panel or a body panel of a vehicle, which comprises:

(a) a wire extending parallel to the direction of movement of the window pane;

(b) a wire driving mechanism to which the ends of said wire are secured and which winds and unwinds said wire according to the rotation thereof;

(c) a guide rail member, attached to the door inner panel or body panel and which extends in substantially the same direction as the motion of the window pane, having a longitudinal leg at each side thereof and the edge of one longiudinal leg being bent at a substantially right angle to form a flange and the edge of the other longitudinal leg being folded backward to form a substantially inverted U-shaped guide runner; and

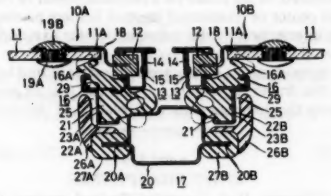
(d) a bracket for attaching the window pane to said wire having a first channel adapted for receiving said inverted U-shaped guide runner so that the window pane moves in the longitudinal direction of said guide rail member while preventing both lateral and rotational movements of the window pane, a second channel separated from said first groove for slidably engaging the flange of said guide rail member, the second channel of said bracket being formed of elements including a rigid support leg and flexible leg elastically urged in the direction of decreasing the width of the second channel, and a stop member for fixing the wire to said bracket, said bracket being attached to the window pane.

4,494,337

CONSTRUCTION OF DOOR IN MOTOR VEHICLE

Hiroyuki Watanabe, Toyota, and Mikio Ohashi, Aichi, both of Japan, assignors to Toyota Tidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1983, Ser. No. 566,425
Claims priority, application Japan, Dec. 29, 1982, 57-233599
Int. Cl.³ E05F *11/38*
U.S. Cl. 49—374 **12 Claims**



1. Construction of a door in a motor vehicle, wherein a slide piece or pieces secured to end portion of a door glass are slidably coupled into a guide groove of a guide portion of a door frame to thereby guide said door glass in the vertical direction, the outer surface of the door glass and the outer surface of the door frame are substantially flush with each other, and said construction includes a door glass weather strip for sealing between the door glass and the door frame and a door weather strip for sealing between the door and the body when the door is closed, characterized in that said door glass weather strip is provided closer to the compartment's side than said guide portion, said slide piece is secured to the forward end of a bracket projecting outwardly from an end edge of the door glass substantially in parallel to the glass surface, said guide portion is opened toward the end edge of the door glass to thereby form a guide groove for enclosing said slide piece, the outer wall surface of the guide portion is made substantially flush with the door glass, and said door weather strip is mounted at a position offset closer to a center pillar in the longitudinal direction than an end face of the door glass weather strip, which is farthest from the center pillar in the longitudinal direction and on the compartment's side in the rear of the door glass weather strip.

4,494,338

LENS-SHAPED ARTICLE OR THE LIKE AND A METHOD AND APPARATUS FOR THE MANUFACTURE OF SAME

Yoshiaki Nagaura, No. 391-2, Tonoharu, Oaza, Chikushino-shi, Fukuaka-ken, Japan

Division of Ser. No. 353,251, Mar. 1, 1982,. This application Sep. 28, 1983, Ser. No. 536,514
Claims priority, application Japan, Mar. 5, 1981, 56-32848; Jun. 12, 1981, 56-91240
Int. Cl.³ B24B *13/00*
U.S. Cl. 51—33 W **2 Claims**

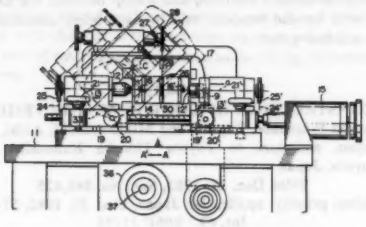
1. Apparatus for the manufacture of a lens-shaped article or the like, comprising:

a pair of facing work holders rotatable about a reference

center axis (a) and movable back and forth along the reference center axis;

a frame rotatable about a horizontal axis (b) perpendicularly intersecting the reference center axis;

a pair of tool holders, detachably holding a pair of oppositely facing machining tools and each holder rotatably



mounted on the frame on a common center of rotation (c), the center of rotation of the tool holders passing through an intersection of the reference center axis and the horizontal axis; and

tool support means connected to the pair of tool holders and to the frame for axially moving the pair of tool holders along the common center of rotation of the tool holders.

4,494,339

KNIFE SHARPENERS

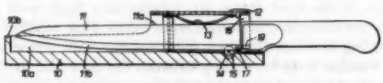
Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword Limited, High Wycombe, England

Filed Nov. 16, 1982, Ser. No. 442,204

Claims priority, application United Kingdom, Nov. 26, 1981, 8135702

Int. Cl.³ B24B *3/54*

U.S. Cl. 51—204 **9 Claims**



1. A knife sharpener comprising a holder for the knife when the knife is not in use, sharpening means for sharpening the cutting edge of the knife as a result of the action of positioning the knife in the holder and/or the action of withdrawing the knife from the holder, and means for selectively varying the effectivenss of the sharpening means in sharpening the cutting edge, even to the extent of rendering the sharpening means ineffective.

4,494,340

HAND-HELD DUAL KNIFE SHARPENER

Larry D. Carter, Mosinee, Wis., assignor to Oy Fiskars AB, Helsinki, Finland

Filed Dec. 29, 1982, Ser. No. 454,427

Int. Cl.³ B24B *3/54*

U.S. Cl. 51—214 **4 Claims**

1. A hand-held knife sharpener (10) comprising:

a gripping portion (20) and a hollow sharpener portion (22) integral with said gripping portion (20);

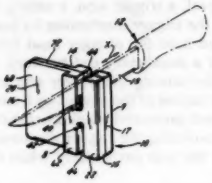
and blade sharpening means (40, 42) on said sharpener portion (22);

said blade-sharpening means (40, 42) including blade-receiving slots (44, 46) extending inwardly from opposite upper and lower edges (14, 15) of said sharpener portion (22);

said blade-sharpening means (40, 42) further including at least two pairs of elongated blade-sharpening elements (50, 52) of different abrasiveness rigidly mounted within said hollow sharpener portion (22) and the two elements (50, 52) in each pair of said elements (50, 52) intersecting one of said blade-receiving slots (44, 46);

said gripping portion (20) and said sharpener portion (22) comprising a pair of molded plastic components (56, 58), each of said components (56, 58) having an inner side and an outer side and comprising a gripping section (60), an integral sharpener section (62), flange means (68, 70) disposed along at least a portion of a peripheral edge of said sharpener section (62), slot portions (64, 65) extending inwardly from upper and lower peripheral edges (14A, 15A) of said sharpener section (62), and receiving elements (76) integrally formed on said inner side of said sharpener section (62);

said components (56, 58) further comprising means (72) for securing said components (56, 58) together in a relation-



ship wherein said inner sides of said components (56, 58) confront each other and wherein said flange means (68, 70) interengage to define a space therebetween in said hollow sharpener portion (22);

said receiving elements (76) on one component (56, 58) supporting one blade-sharpening element (50, 52) of each pair, whereby said two pairs of blade-sharpening elements (50, 52) of different abrasiveness are secured in said space between said pair of components (56, 58) when the latter are secured together,

and each pair of blade sharpening elements (50, 52) are arranged in converging and overlapping relationship relative to each other and extend into an associated blade-receiving slot (44, 46) so as to define a groove (90) which is located within a respective blade-receiving slot (44, 46).

4,494,341

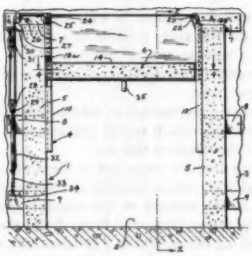
DOCK SHELTER WITH IMPROVED ADJUSTABLE HEAD PAD

James M. Schwab, Waukesha, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.

Filed Aug. 26, 1982, Ser. No. 412,018

Int. Cl.³ E04H *14/00*; E06B *1/00*

U.S. Cl. 52—173 DS **6 Claims**



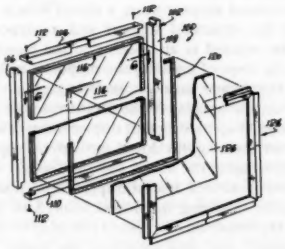
1. A dock shelter comprising a supporting structure attached to the dock wall, a pair of vertical side pads bordering a doorway in said dock wall, a head pad extending horizontally between the side pads, a pair of cables, one end of each cable being connected to the supporting structure and the opposite

end of each cable being attached to the respective side edges of the head pad, pulley means mounted on the supporting structure for supporting said cables in movement and including a pair of pulleys mounted for rotation on a common shaft, said pulley means being disposed for free floating movement with respect to the supporting structure, guide means connected to the supporting structure for guiding the head pad in vertical movement, said guide means comprising a tubular member connected to each vertical side edge of said head pad, and a pair of guideways mounted on the supporting structure and disposed to receive the respective tubular member, said opposite end of each cable extending through the respective tubular member and being attached to the bottom end of said tubular member, and counterbalancing means connected to said pulley means for urging said pulley means downward to counterbalance the weight of the head pad.

4,494,342
INSULATED GLASS ADAPTIVE METHOD AND APPARATUS

G. Warren Decker, 131 Lenwood Dr., Sparks, Nev. 89431

Filed Dec. 21, 1982, Ser. No. 451,980
Int. Cl.³ E06B *3/64, 3/28*
U.S. Cl. 52—203 **5 Claims**



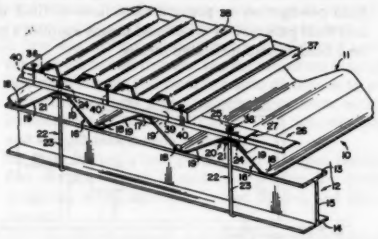
1. The method of converting an existing single-pane glass element within a frame in a building to a multi-pane glass element within the same frame comprising: removing at least a portion of the caulking material along one side of the frame from the frame and the glass; loosening a portion of the frame about the existing pane of glass within the frame; providing spacer material about the perimeter of the existing glass within the frame; placing a new pane of glass cut to the appropriate size against the spacer material in such manner as to leave a space between the two panes of glass; and placing an adapter element inside the frame in such manner that it extends outwardly from the existing pane of glass and grips and holds the external edge of the new pane of glass.

4,494,343
STRUCTURE FOR RETROFITTING CORRUGATED BUILDING EXTERIORS

James A. Berry, and Morton Sherman, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 126,517, Mar. 3, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,899
Int. Cl.³ E04C *2/26, 2/32*
U.S. Cl. 52—309.11 **9 Claims**

1. A building structure comprising a corrugated-like inner sheath configurated with crests and valleys, the inner sheath being secured to its substructure by first fastening means which extends through and projects exteriorly of the inner sheath, a plurality of rigid, long, thin metal securement strips secured in a spaced arrangement to the inner sheath by attachments to the first fastening means, the metal securement strips being positioned on and lying entirely above and transverse to the crests of the sheath, a layer of insulation board positioned over the metal securement strips, an outer weather-resistant covering positioned over the layer of insulation board, and second fastening means penetrating through and securing together only

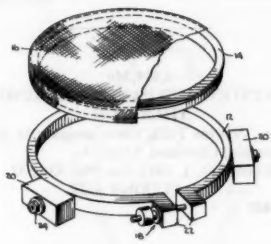


the outer weather-resistant covering, the layer of insulation board and the metal securement strips.

4,494,344
WRINKLE PREVENTION FRAME FOR LENS MANUFACTURE

Donald H. Petcen, Colonial Heights, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Apr. 22, 1983, Ser. No. 487,658
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.2 **14 Claims**



1. A device to prevent optical distortion in glass-plastic composite lenses during lamination thereof comprising:

an open outer ring of a flexible material equipped with adjusting means, said open outer ring having weights positioned thereon;

an inner ring held by said outer ring; and

an elastic material in stretched position covering said inner ring and maintained in stretched position by a force exerted on said outer ring by the tightening of said adjusting means.

4,494,345
BACK FLOW VALVE

Bruce M. Peterson, 313 Elizabeth St., Detroit Lakes, Minn. 56501

Filed Aug. 12, 1982, Ser. No. 407,695
Int. Cl.³ F16K *31/34*
U.S. Cl. 137—414 **8 Claims**

1. An inline back flow valve for a septic system or the like comprising:

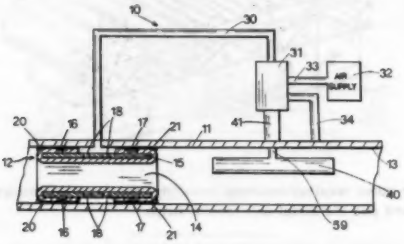
a fluid passageway for flow of fluids therethrough, said fluid passageway having an upper portion and a lower portion;

means for determining that a condition of back flow is occurring in said fluid passageway;

said means including a float located in the upper portion of said fluid passageway to permit fluid to flow beneath said float when no back flow condition exists;

said means adaptable to be connected to a source of pressurized fluid;

inflatable means mounted in said fluid passageway, said inflatable means operable for inflating to thereby seal said fluid passageway to prevent back flow of fluid through said fluid passageway when said means supplies a pressurized fluid to said inflatable means;



said inflatable means and said means for determining that a condition of back flow is occurring located in line in said fluid passageway;

a first fluid passage connected to said inflatable means to supply pressurized fluid to inflate said inflatable means; and

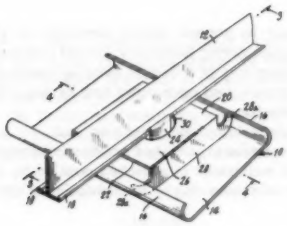
a second fluid passage connected to said inflatable means to vent pressurized fluid to deflate said inflatable means.

4,494,346

CEILING SYSTEM AND PANEL-SECURING DEVICE THEREFOR

J. Lynn Gailey, Newton Falls, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Nov. 1, 1982, Ser. No. 438,532
Int. Cl.³ E04B 5/52
U.S. Cl. 52—489 **8 Claims**



1. A device for securing, to a horizontally elongated stringer, a subjacent horizontally elongated ceiling panel of upwardly opening C-shaped profile with resiliently deformable side flanges, comprising

(a) a carrier member grippable between the side flanges of the panel in a fixed angular position relative thereto; and

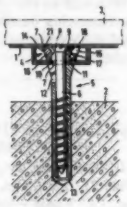
(b) a hanger member, mountable on the stringer in a fixed angular position relative thereto, for supporting the carrier member beneath the stringer for unobstructed rotation relative to the stringer about a vertical axis, such that when the carrier member is gripped by the panel and the hanger member is mounted on the stringer, the panel is suspended from the stringer and can be oriented at any desired angle relative to the stringer as viewed in plan projection.

4,494,347

METHOD AND ASSEMBLY FOR FASTENING FACADE PANELS OR FACADE SUPPORTS IN SPACED RELATION TO A SUPPORT SURFACE

Raimer Uhlig, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,638
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140861
Int. Cl.³ E04B 1/38
U.S. Cl. 52—508 **9 Claims**



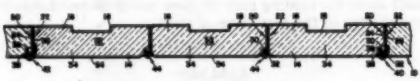
1. A method of assembling facade members in spaced relation to a structural support using a dowel which can be anchored into the structural support and a support member which can be secured in an opening in the facade member, comprising the steps of inserting the support member into the opening in the facade member, insterengaging the support member within the opening in the facade member so that the support member is secured against displacement relative to the facade member, inserting the dowel through the support member and interengaging the dowel and the support member so that the dowel is secured against displacement relative to the support member, inserting the dowel secured to the support member and the facade member into a prepared borehole in the structural support and then anchoring the dowel within the borehole in the structural support.

4,494,348

PRE-ENGINEERED MODULAR BUILDING PANEL ASSEMBLY

Rudolph F. Kastelic, 15436 Wenhaven, Chagrin Falls, Ohio 44022

Filed Dec. 15, 1981, Ser. No. 331,086
Int. Cl.³ E04C 1/10
U.S. Cl. 52—588 **12 Claims**



1. A panel assembly comprising:

a plurality of panel sets including a plurality of rigid panel members, each panel member having a panel wall and first and second longitudinal edge flanges configured for overlapping and mating reception to define a panel joint with one of the second and first edge flanges respectively of an adjacent second panel member, said first and second edge flanges having end portions disposed remote from said panel wall to define a panel cavity, each panel set further including a first end panel joint, a second end panel joint and at least one intermediate panel joint;

an insulating core comprising a plurality of insulating core sets with each core set including an insulating body and a moisture barrier skin received in said panel cavity and about said panel joints and being sized to span one of said panel sets, said insulating body including intermediate

longitudinal slots for receiving intermediate panel joints of said one panel set; and,

means for fastening said edge flanges and said insulating core.

4,494,349

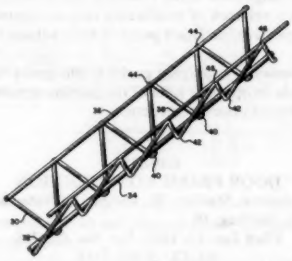
TRUSS STRUCTURE

Arthur C. Clements, 103 M. Midtown Bldg., Munoz Rivera, Hato Rey, San Juan, P.R. 00918

Filed Jul. 28, 1982, Ser. No. 402,777

Int. Cl.³ E04C 5/06

U.S. Cl. 52—633 **7 Claims**



1. A truss structure comprising:

a. first and second elongated wire members each formed into a continuous generally triangular shape,

b. a first longitudinal wire member coupled to the lower apices of said first and second triangular wire members such that the apices of one triangular wire member are staggered with respect to the apices of the other triangular member and the planes of said first and second continuous triangular members form an angle with each other, and

c. second and third longitudinal wire members coupled to the upper apices of said first and second triangular wire members respectively.

4,494,350

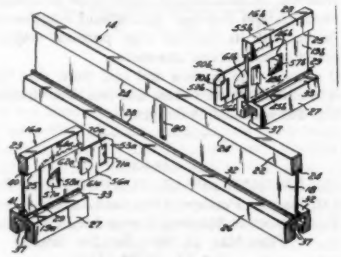
ALUMINUM SUSPENSION SYSTEM

Joseph F. Sharp, Norwalk, Calif., assignor to Ceiling Dynamics, Inc., Tucson, Ariz.

Filed Sep. 20, 1982, Ser. No. 420,354

Int. Cl.³ E04C 2/42; F16B 7/22

U.S. Cl. 52—665 **9 Claims**



1. A suspended ceiling grid system, comprising:

a plurality of main runners for forming plural longitudinal beams in spaced, parallel relationship, each of said main runners comprising a web, having upper and lower edges, and one or more slots therethrough;

a first and a second cross runner for forming an interconnection with a main runner, each cross runner fitting between a pair of adjacent longitudinal beams and each cross runner comprising a web, having upper and lower edges;

first means detachably mounted on said first cross runner for engaging said second cross runner;

second means detachably mounted on said second cross runner for engaging said first cross runner; and

said first and second means directly interlocking said cross runners when said first and second means are inserted into said main runner slot from opposite directions to prevent movement of said cross runners away from each other independent of said main runner web, wherein said first and second means each comprise:

a flat plate having a base portion and a tongue portion;

a first dimple formed in said base portion for detachably mounting in an aperture formed on the end of a cross runner;

a second dimple and an aperture formed on said tongue portion; and

a tab formed on the end of a cross runner, said tongue aperture receiving said tab when the tongue portions are inserted into said main runner slot from opposite directions.

4,494,351

BOOMS FOR CRANES OR THE LIKE

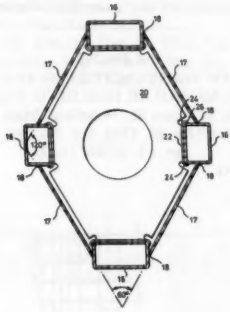
William R. Thomasson, County Durham, England, assignor to Coles Cranes Limited, Sunderland, England

Filed Aug. 18, 1982, Ser. No. 409,228

Claims priority, application United Kingdom, Aug. 18, 1981, 8125172

Int. Cl.³ E04C 3/32

U.S. Cl. 52—690 **9 Claims**



1. A boom for a crane comprising:

four longitudinal stiffening members spaced apart;

four substantially flat longitudinal plates, each plate being welded between adjacent stiffening members, the arrangement being so constructed as to form a boom with a substantially diamond shaped parallelogram cross-section; and

transverse plates extending transversely to and between the stiffening members and secured thereto at spaced locations along the boom, said transvers plates being spaced apart from the longitudinal plates.

4,494,352

REINFORCED STRUCTURAL MEMBER AND METHOD OF FABRICATION

John C. Leemhuis, 10438 Lesterford Ave., Downey, Calif. 90241

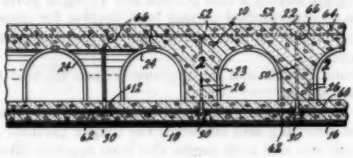
Division of Ser. No. 069,874, Aug. 27, 1979, Pat. No. 4,312,163. This application Jul. 13, 1981, Ser. No. 283,021

Int. Cl.³ E04G 21/00

U.S. Cl. 52—741 **7 Claims**

1. An improved method of construction of a composite truss member of a type which includes a base slab of concrete containing reinforcing means extending through the slab, the said

truss member having a web formation providing a network of spaces for allowing air circulation through the network, the truss member having an overlying layer of concrete over the web formation and having spaced columns of concrete extending through the web formation to the said base slab, the said truss member having reinforcing members embedded in the slabs including reinforcing strut members extending through the spaced columns of concrete, the improvement including the step of positioning first reinforcing strut members on a surface on centers corresponding to the centers of the spaced



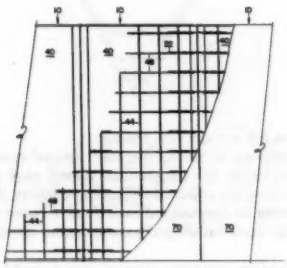
columns of concrete to be formed, forming the said reinforcing members to have top ends when positioned to be at substantially the top level of the lower slab of concrete and then pouring the concrete with the said reinforcing members in position prior to forming the said network and overlying layer of concrete and spaced columns of concrete, and securing second reinforcing strut members to predetermined ones of the first reinforcing strut members, attaching screed support means to said predetermined second reinforcing strut members, supporting screeding means from said screed support means, and screeding the surface of the lower slab of concrete.

4,494,353

METHOD OF MANUFACTURING AND BUILDING PREFORMED MODULAR BUILDING WALL SECTIONS

Alvin W. Lewis, 82 Court St., Westfield, Mass. 01085

Filed May 20, 1982, Ser. No. 380,275
Int. Cl.³ E09G *21/00*
U.S. Cl. 52—741 **2 Claims**



1. A method of constructing a building load-bearing wall structure disposed upon a supporting base foundation, the method comprising the steps of:

prefabricating a plurality of elongate wall modules each comprised of an open network of spaced reinforcing bars extending along X and Y axes on opposite sides of and spaced from an insulation panel, forming a skeletal network of a frame assembly consisting of:

a. seating and welding a horizontally-disposed bottom channel to a sill bolted to a base foundation,

b. seating and bolting a horizontally-disposed top plate upon a top channel,

c. seating spaced pairs of vertically-disposed U-shaped hat channels in back-to-back relationship with a stiffening connector sandwiched between and welded to the hat channels of at least some of said pairs,

disposing each wall module into a respective rectangular portion of the frame assembly defined by portions of the top and bottom channels and the respective adjacent hat channel at each side,

nesting each edge of the insulation panel of each wall module in the defined U of the respective adjacent channel, welding the hat channels and connectors to the adjacent bottom and top channels,

extending a plurality of horizontally-disposed reinforcing connecting rods through strategically-aligned openings in each arrangement of hat channels and connector and into the open network of reinforcing bars on opposite sides of the respective insulation panel of each adjacent wall module,

and pneumatically applying gunite to the spaces between the channels on opposite sides of the insulation panel to define a reinforced concrete structure.

4,494,354

DOOR FRAME CONSTRUCTION

James R. Johnston, Sterling, Ill., assignor to National Manufacturing Co., Sterling, Ill.

Filed Jan. 17, 1983, Ser. No. 458,716
Int. Cl.³ E04C *2/34*
U.S. Cl. 52—814 **10 Claims**

1. A door frame, comprising in combination

first and second vertical frame members each having first and second mutually parallel channels facing toward the other of said vertical frame members,

said first channel being defined by a first web portion and first and second rigid side flanges,

said second channel being defined by a second web portion, a third rigid side flange and said second rigid side flange,

said flanges each having straight mutually parallel inner and outer surfaces perpendicular to said first and second web portions,

a plurality of horizontal frame members respectively received in said first channels and disposed against said first webs and said inner surfaces of said first and second flanges,

a panel positioned against said horizontal frame members received in said second channel of said vertical frame members and disposed against said inner surface of said flange with its vertical edge portions respectively disposed in said second channels,

said second web portion and said third side flange being substantially thicker than said first web portion and said first and second side flanges.

4,494,355

CASE FEEDING APPARATUS FOR DROP PACKER

Lloyd D. Johnson, Portland, Conn., and Jack H. Lewis, Marion, N.Y., assignors to Standard-Knapp, Inc., Portland, Conn.

Filed Mar. 19, 1982, Ser. No. 359,813
Int. Cl.³ B65B *57/10*
U.S. Cl. 53—69 **6 Claims**

1. A case feeding apparatus for use with a drop packer which requires each case to mate with a stationary grid structure so that the articles are guided as they drop into the case, said apparatus comprising:

a lift table movable between up and down positions for raising each case into mating relationship with the fixed grid structure,

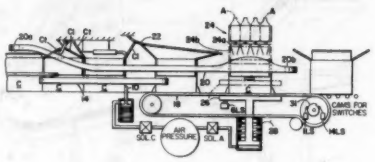
case conveyor means for moving cases onto the lift table in the down position of said table,

indexing means having a start condition and a run condition for intermittently advancing said case conveyor means from a first predetermined position to a second position spaced therefrom when said table is down,

sensing means to provide a first signal when a case moves onto said table in said table down position,

means responsive to said first signal for moving said lift table up and after a predetermined time delay moving said table down,

sensing means to provide a second signal when said table is down,



means responsive to said second signal for energizing said indexing means,

means returning said indexing means to said start condition,

said case conveyor means including at least two laterally spaced conveyors, one of said two conveyors having trailing lugs and the other of said two conveyors having leading lugs for accurately locating the cases therebetween during intermittent case conveyor movement, and shaft means for driving said two conveyors, said shaft means including means for adjustably positioning one of said two conveyors relative to the other to accommodate cases of different longitudinal dimension.

4,494,356

PRODUCING APPARATUS FOR FISH MEAT PROCESSED FOOD

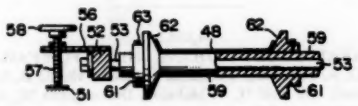
Tetsuo Takiguchi, Ube, Japan, assignor to Kabushiki Kaisha Yanagiya Tekkosho, Yamaguchi, Japan

Filed Aug. 2, 1982, Ser. No. 404,017

Claims priority, application Japan, Aug. 1, 1981, 56-120816

Int. Cl.³ A22C *7/00, 25/00*

U.S. Cl. 53—122 **4 Claims**



1. An apparatus for continuously producing fish meat processed food in a bundled state of a number of filament-like fish meat from paste-like fish meat, the apparatus comprising:

a solidification device for solidifying said paste-like fish meat into thin web-like fish meat, said solidification device comprising a nozzle device for stretching said paste-like fish meat into a web-like fish meat, a first endless belt device for transporting said paste-like fish meat from said nozzle device, a heating device provided on said first endless belt device to heat and solidify said paste-like fish meat, and a second endless belt device whose transporting inlet side is positioned slightly spaced from a transporting outlet side of said first endless belt device, said second endless belt cooling the solidified fish meat from said first endless belt device while transporting the solidified fish meat at the same moving speed as that of said first endless belt device;

a first cutting device positioned on the transporting outlet side of said second endless belt device to cut said solidified fish meat lengthwise to form fine filament-like fish meat;

a collection device for collecting said filament-like fish meat while transporting the same;

a bundling device for urging and bundling the collected fish meat collected by said collection device, said bundling device comprising a lower conveyor device extending in a moving direction of said collected fish meat and having a lower supporting portion for supporting a lower portion of said collected fish meat and a lower conveyor device extending above said lower conveyor device and having an upper supporting portion for pressing said collected fish meat in a direction of said lower supporting portion while successively bearing on the upper portion of said collected fish meat;

a packaging device positioned on transporting outlet sides of said upper and lower conveyors to package the peripheral surface of the bundled fish meat from said bundling device, said packaging device comprising a packaging film roll for packaging said bundled fish meat and a guide member for guiding said bundled fish meat so as to package the peripheral surface thereof while bearing the packaging film from said packaging film roll on said bundled fish meat; and

a second cutting device for cutting the packaged fish meat packaged by said packaging device into its axial required length.

4,494,357

STERILIZATION OF PACKAGING MATERIAL

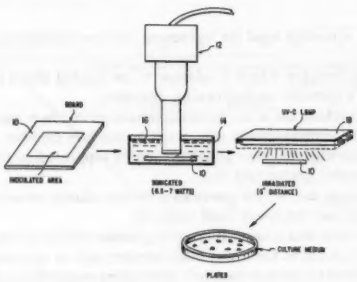
Michael J. DiGeronimo, Chester, N.Y., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 336,212, Dec. 31, 1981, Pat. No. 4,424,188.

This application Aug. 25, 1983, Ser. No. 526,293

Int. Cl.³ B65B *55/00*

U.S. Cl. 53—167 **16 Claims**



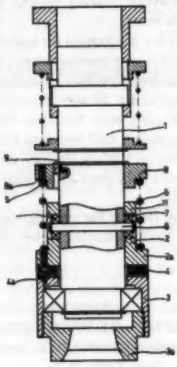
9. An apparatus for the sequential sterilization of sheet packaging material such as a paperboard laminate, the packaging material adapted to be sterilized and then formed into individual aseptic containers, the containers thence adapted to be filled with a substance, such as a potable liquid, which is to be stored in the containers in the aseptic container environment until use, the apparatus including, a vat of liquid free of chemical biocide, means for continuously moving the packaging material into and out of the vat of liquid, a sonicator in the liquid vat for imparting sonic energy to the liquid, means for maintaining at least one surface of a portion of the packaging material in contact with the liquid, whereby the at least one surface of the packaging material is exposed to sonic energy, means for drying the packaging material after it moves out of the vat, means downstream of said vat for subjecting at least the sonicated surface of the packaging material to UV radiation after the packaging material, whereby sterile packaging material useful for aseptic packaging is produced.

4,494,358

TORSIONAL TORQUE CONTROLLED FRICTION SCREWING HEAD FOR CAP INSTALLATION

Michel Zalkin, Saint-Cloud, France, assignor to Etablissements Andre Zalkin et Cie, Rueil, France

Filed Mar. 9, 1982, Ser. No. 356,583
Claims priority, application France, Mar. 25, 1981, 81 06033
Int. Cl.³ B65B 7/28; B67B 1/06
U.S. Cl. 53—331.5 6 Claims



1. A screwing head for tightening caps on containers, comprising,

a hub member which is adapted to be rotated about its axis in a forward cap-tightening direction,

a unit which has a cap gripping means on its lower end, said unit being rotatably supported on the hub member,

a lower bush member which is slidably supported on the hub member above said unit,

a friction disc which provides a friction clutch between the unit and the lower bush member,

a torsional and compression spring means which has one end connected to the lower bush member and an opposite end affixed to the hub member, said spring means being under torsion to provide forward rotational displacement of the lower bush member relative to the hub member, said spring means also being under compression to apply an axial compressive force to said frictional disc,

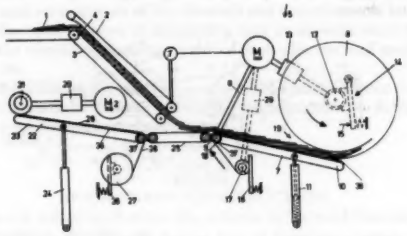
a cam mechanism operable between said lower bush member and said hub member, said cam mechanism including a cam slot in one member and a cam follower on the other member, said cam slot sloping at a given angle relative to a transverse plane of the hub member and having upper and lower slopes, said cam follower acting on both upper and lower slopes of the cam slot, said cam mechanism being operable to lock by a wedging action the lower bush member with the friction disc until the lower bush member rotates against the torsional force of the spring means in a reverse direction of rotation relative to the hub member when the cap is screwed on the container to the required torque, said cam mechanism being operable in response to said reverse direction rotation to raise the lower bush member slightly to permit slippage of said friction clutch.

4,494,359

METHOD AND APPARATUS FOR THE LONG-TERM PRESSING OF PRINTED PRODUCTS ESPECIALLY NEWSPAPERS

Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Jan. 11, 1982, Ser. No. 338,568
Claims priority, application Switzerland, Feb. 3, 1981, 692/81
Int. Cl.³ B65H 17/02
U.S. Cl. 53—430 8 Claims



1. A method for the long-term pressing of printed products, especially newspapers, each of the products having a product spine, comprising the steps of:

providing an imbricated arrangement of the products so as to define an imbricated product stream;

feeding the printed products in the imbricated product stream so as to move in a first predetermined direction with the product spine leading;

tightly winding the thus infed imbricated product stream while moving in said predetermined direction into a wound package;

unwinding the wound package and rewinding the previously wound package while moving the unwound imbricated product stream in a direction opposite to said predetermined direction so that the product spine trails;

tightly rewinding said imbricated product stream while moving in said other direction into a rewound package; and

both the initial winding of the package and the rewinding of the unwound package into a rewound package is accomplished by infeeding the product stream from below into the package being wound.

4,494,360

APPARATUS FOR BUNDLING SHEETS FOR FASCICLES

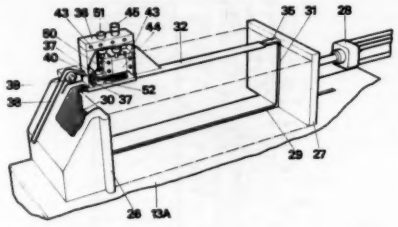
Carl G. A. Flensburg, Per Albin Hanssons väg 52 B, S-214 63 Malmö, and Rolf H. V. Isaksson, Diakongatan 59, S-216 23 Malmö, both of Sweden

PCT No. PCT/SE81/00144, § 371 Date Jan. 15, 1982, § 102(e) Date Jan. 15, 1982, PCT Pub. No. WO81/03315, PCT Pub. Date Nov. 26, 1981
PCT Filed May 13, 1981, Ser. No. 341,992
Claims priority, application Sweden, May 13, 1980, 8003573
Int. Cl.³ B65 63/02, 13/20, 13/04, 13/06
U.S. Cl. 53—528 4 Claims

1. An apparatus for bundling sheets of fascicles supplied one by one and arranged in a regular loose bundle with flat sides, said apparatus including a bundling position for building up the loose regular bundle of sheets or fascicles on a support surface, a strapping position on said support surface disposed along side said bundling position, in parallel relation therewith, and parallel to the longitudinal dimension of the bundle, means for displacing a bundle from said bundling position to said strapping position in a direction transverse to said bundling position, means for feeding a band or the like in a direction generally parallel to the longitudinal dimension of a bundle in the strapping position, means for guiding the band in a loop around a bundle in the strapping position and means for sealing a loop of

band laid around a bundle in the strapping position, wherein the improvement comprises:

said strapping position having spaced apart press plates, with one of said plates being movable toward and away from the other plate to compress a bundle located between said plates, said means for guiding the band in a loop around a bundle compressed between said press plates comprising a groove formed in each said press plate and a groove in said support surface for the bundle with said groove in said support surface extending parallel to the longitudinal



dimension of the bundle and with said groove in said support surface extending between said grooves in said press plates, said grooves in said press plates intersecting said groove and said support surface at right angles, said means for guiding the band further including a guide member located in a plane that passes through said groove in said support surface and said grooves in said press plates but being spaced from said groove in said support surface and extending parallel thereto, said guide member having one end which extends from one of said press plates.

4,494,361

PACKAGING OF DRINKING STRAWS

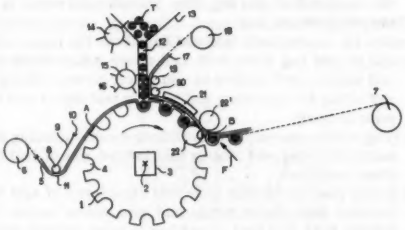
Jean-Claude Barathon; Fernand Moiny, both of Donzy; Christian Soyez, Cosne, and Gérard Soyez, Celle S. Loire, all of France, assignors to Soyez FR. S.A., France

Filed Aug. 4, 1981, Ser. No. 290,003

Claims priority, application France, Aug. 6, 1980, 80 17371

Int. Cl.³ B65B *47/04*

U.S. Cl. 53—553 **11 Claims**



1. An apparatus for the manufacture of a sheet constituted by a first and second strip of flexible material enclosing a series of tubes therbetween, said tubes having ends and being in the form of lightweight hollow members, said apparatus comprising an endless member with a surface defining parallel recesses each capable of receiving a tube, said endless member having an axis of rotation, means for rotating the endless member continuously about said axis of rotation, means for bringing the first strip of flexible material into contact with said surface of the endless member over a sector of the path of the endless member, means for distributing the tubes including a supply conduit in which the tubes form a column of tubes, said column having a lower end which is parallel to the recesses, means for pushing said column of tubes through the conduit in the direction of said surface, and in which the supply conduit has an outlet which opens out in the immediate vicinity of the surface of the endless member at one point of said sector, so that the tube present at the outlet of the conduit and in contact with the first strip is forced into the recess of the endless member which passes below said outlet thus pushing the first strip into the recess and is immediately replaced by the next tube in the column, means for causing the second strip of flexible material to overlap the first strip downstream of said outlet in the direction of rotation of the endless member, and rotary heated wheels and a guide, said wheels permanently touch the two overlapping strips by toothed heated tracks, the rotation of the wheels being synchronized with that of the endless member so that the tubes are located between the heated teeth and the first and second strips are welded one to the other in regions which surround the ends of the tubes, the guide being located on a portion of said sector between the outlet of said supply conduit and the heated wheels and being employed to keep the two strips pressed one against the other between said outlet and said wheels.

4,494,362

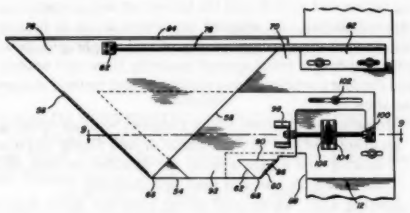
PACKAGE FORMING WEB FOLDER

Keith C. Koch, Westwood, Iowa, assignor to Metromail, Inc., Mt. Pleasant, Iowa

Filed Mar. 24, 1981, Ser. No. 247,109

Int. Cl.³ B65B *9/06*

U.S. Cl. 53—550 **13 Claims**



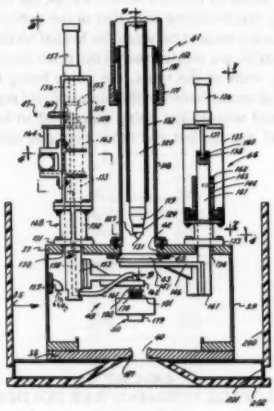
1. In combination with means for feeding an unfolded web of flexible sheet material along a predetermined direction of travel, said unfolded web having longitudinally extending intermediate and side portions, a web folding device having a supporting surface panel guiding travel of the unfolded web along said direction of travel, and guide means for directionally changing travel of the web including an intermediate segment on the panel perpendicular to said direction of travel about which the intermediate portion of the web undergoes a single 180° change in travel direction and a pair of side segments of the panel extending at angles to the direction of travel about which the side portions of the web undergo 90° changes, respectively, in travel direction, the improvement comprising a pair of planar guide members respectively connected to said side segments and extending therefrom by different distances in said direction of travel parallel to the panel, each of said guide members including a free edge about which one of the side portions of the web undergoes a second 90° change in travel direction into overlapping contact with the other of the side portions to form a flat tube.

4,494,363

METHOD AND APPARATUS FOR ASEPTICALLY FILLING CONTAINERS

Albert F. Rica, Stockton, Calif.; John C. Davis, Palentine, and Ronald J. Reiss, Hoffman Estates, both of Ill., assignors to FranRica Mfg. Inc., Stockton, Calif. and Container Technologies, Inc., Barrington, Ill.

Filed Aug. 20, 1982, Ser. No. 409,927
Int. Cl.³ B65B 7/02, 31/02, 55/04
U.S. Cl. 53—426 36 Claims



1. The method of aseptically filling a container having a fitment therein, said fitment including a rigid neck, a flange on the outer periphery of said neck, a frangible diaphragm extending across said neck to seal the interior at said container and an exposed sealing rim adapted to receive a lid in heat sealed engagement disposed outwardly of said diaphragm, said frangible diaphragm being spaced inwardly from said sealing rim, said flexible container being sterilized, said method comprising the steps of:

providing an enclosed filling chamber with an opening;

securing said bag to the outside of said filling chamber by locking said flange against the chamber so that said fitment extends into and seals said opening;

holding a lid within said filling chamber apart from said fitment;

introducing steam into said filling chamber to sterilize said chamber, the exposed portion of said fitment and said lid while maintaining the interior of said flexible container free from steam;

maintaining a fill tube completely in an asceptic housing that is sealed from said chamber;

opening said housing and introducing said fill tube trough said chamber and

puncturing said frangible diaphragm with said fill tube;

establishing a sealed relationship between said fill tube and the inside of said neck in a region spaced inwardly from said rim;

introducing product through said fill tube into said flexible container;

withdrawing said fill tube from said neck completely into said housing and sealing said housing from said chamber;

transporting a lid into position across said rim;

heat sealing said lid to said rim while within said chamber; and

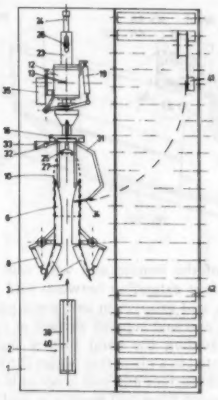
removing the neck of said container from the opening of said filling chamber.

4,494,364

APPARATUS FOR PACKING FOWLS IN PLASTIC BAGS

Pieter Meyn, P.P. Box 16, 1510 AA Oostzaan, Netherlands

Continuation of Ser. No. 256,561, Apr. 22, 1981, abandoned.
This application Nov. 10, 1983, Ser. No. 550,717
Claims priority, application Netherlands, Apr. 25, 1980, 8002379
Int. Cl.³ B65B 5/04, 7/12
U.S. Cl. 53—570 7 Claims



1. An apparatus for packing a bird in a plastic bag, a magazine holding said plastic bag, a funnel, one end of said funnel inserted into said bag previously opened by blown air, an abutment surface, plunger means pressing said bird into said bag and forcing said bird together with said bag against said abutment folding said bird's legs back against its body in said bag, means for tying said bag closed, the improvement comprising:

a support;

clamp means carried by said support for grasping and holding said bag after said bird has been pressed into said bag by said plunger means;

pincer means carried by said support for closing and holding the open end of said bag after said plunger means is removed from said bag;

means for rotating said bird and bag about the longitudinal axis of said bag along with said clamp means relative to said support and relative to said pincer means holding an end of bag for tightening and twisting said end of said bag prior to tying;

a tying station spaced from said clamp means including said means for tying and closing said twisted end of said bag about said fowl;

a slotted plate receivable over said closed end of said bag between said clamp means and said pincer means for holding back said bird as said bag is being twisted; and

said slotted plate coupled to said clamp means whereby said slotted plate and said clamp means are rotated together with the bag to reduce chaffing of said bag.

4,494,365

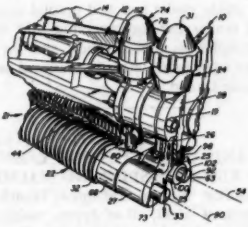
MOWER CUTTING UNIT

Lawrence L. Lloyd, 1001 Olmstead Ave., Pacific Grove, Calif. 93950

Filed Oct. 26, 1983, Ser. No. 545,971
Int. Cl.³ A01D 55/18
U.S. Cl. 56—256 23 Claims

1. A mower cutting unit of the type including a mower blade mounted for rotation to a frame and support members mounted to the frame which support the cutting unit on a mowing surface, the improvement comprising:

one said support member comprising a generally horizontal slotted expunger roller mounted to the frame for rotation about an expunger roller axis, an outer expunger roller surface and a plurality of vertically disposed annular slots located in a predetermined axial pattern along said expunger roller, said slots dividing said expunger roller surface into a plurality of expunger roller surface segments;



a supplementary cutter;

means for mounting said supplementary cutter adjacent and behind said expunger roller; and

means for actuating said supplementary cutter;

whereby horizontally disposed plant matter is pulled up into said circular slots as said expunger roller surface segments roll over said plant matter to allow said supplementary cutter to cut said pulled up plant matter.

4,494,366

YARN END UNTWISTING DEVICE FOR A PNEUMATIC YARN SPLICING DEVICE

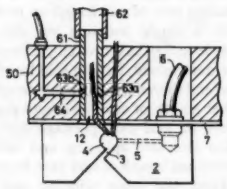
Koji Deno, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 15, 1983, Ser. No. 466,725

Claims priority, application Japan, Feb. 18, 1982, 57-21995[U]

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **12 Claims**



1. A yarn end untwisting device for a pneumatic yarn splicing device, comprising a splicing block having a tubular nozzle hole, a tubular untwisting pipe insertable into the tubular nozzle hole, the untwisting pipe having one or more jetting holes of a predetermined shape formed therein, and a fluid passage formed in the splicing block, the fluid passage opening into the nozzle hole for jetting a pressurized fluid into the nozzle hole, wherein the amount or direction of the pressurized fluid jetting into the nozzle hole can optionally be changed by inserting the untwisting pipe into said nozzle hole so that a selected one of said jetting holes communicates with said fluid passage.

4,494,367

SPLICER DEVICE TO DISASSEMBLE AND RECOMPOSE YARN MECHANICALLY

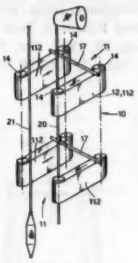
Roberto Badiali, Pordenone, Italy, assignor to Officine Savio S.p.A., Pardenone, Italy

Filed Nov. 4, 1982, Ser. No. 439,323

Claims priority, application Italy, Nov. 4, 1981, 83493 A/81; Sep. 30, 1982, 83456 A/82

Int. Cl.³ B65H *69/06*; D01H *15/00*

U.S. Cl. 57—22 **20 Claims**



1. Splicer device through which yarns pass to mechanically disassemble and recompose yarn having tail ends comprising means to untwist-retwist the yarns to be spliced movable in opposite directions,

means for sideways displacement of at least one of two yarns to bring said yarns together after untwisting,

clamping means intermediate said untwisting-retwisting means to clamp said yarns in an untwisted condition,

securing and tearing means on each side of said untwist-retwist means to pluck and remove excessive tails of each yarn,

retwisting means intermediate said untwist-retwist means which together with said untwist-retwist means retwist the yarns, and

discharge means on each side of said untwist-retwist means to remove the excessive tails of said yarns.

4,494,368

METHOD OF PREVENTING IRREGULAR UNTWISTING OF YARN ENDS IN SPLICING SPUN YARNS

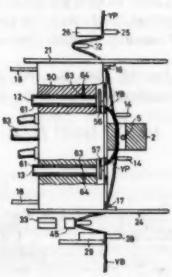
Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 15, 1983, Ser. No. 466,726

Claims priority, application Japan, Feb. 18, 1982, 57/24955

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **10 Claims**



1. A pneumatic yarn splicing method of spun yarns including steps of pneumatically untwisting and loosening the respective free yarn ends to be spliced, overlapping the untwisted yarn

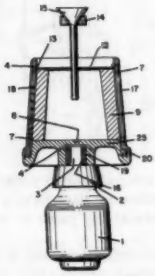
ends one over another, and applying jetted fluid flow on the overlapped yarn ends to mix and entangle fibers of the yarn ends together for splicing, characterized in that each of said untwisted spun yarn ends is cut at a predetermined position thereof prior to overlapping the yarn ends to make the respective lengths of the untwisted yarn end portions uniform.

4,494,369

SPINNING POT USED FOR TWISTING AND WINDING SYNTHETIC TEXTILE YARNS

Rajan V. Ramani, Bangalore, India, assignor to Council of Scientific and Industrial Research, New Delhi, India

Filed Sep. 29, 1982, Ser. No. 426,729
Int. Cl.³ D01H *7/80*
U.S. Cl. 57—76 **8 Claims**



1. A spinning pot for twisting and winding synthetic textile yarns comprising:

a barrel defining two open ends;

a removable lid located at one end of the barrel spanning the diameter of the barrel and having a locating step concentric with the barrel;

a base plate slidingly supporting the edge of the other end of the barrel and projecting into the barrel concentrically with the barrel;

locking means projecting from the base plate into a corresponding recess defined by an inner wall of the barrel during rotation of the barrel to allow the barrel to expand uniformly without lifting off from the base plate; and

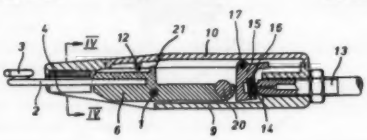
a bushing have a first member integral with the base plate and a second member fixed to a rotatable shaft of a motor, said second member engaging said first member for rotation of said barrel upon activation of said motor.

4,494,370

STOP MOTION FOR TEXTILE MACHINES

Siegfried Inger, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 457,884
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 3201694
Int. Cl.³ D01H *13/16*
U.S. Cl. 57—81 **11 Claims**



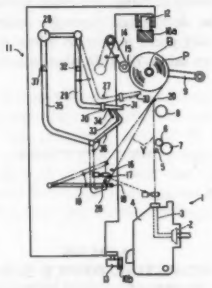
1. A stop motion mechanism for a textile machine for transmitting a signal to stop a work station in the event of thread breakage or exhaustion and comprising a thread sensor bar, a thread guide eyelet secured to one end of said thread sensor bar for receiving a running thread therethrough, means pivotally mounting said thread sensor bar for movement between a first position occupied when the thread is running normally through said thread guide eyelet and a second position occupied when the thread breaks or exhausts, means responsive to said thread sensor bar occupying said second position for transmitting the signal, and guide means positioned between said thread guide eyelet and said pivotal mounting means for said thread sensor bar for receiving said thread sensor bar when it occupies its first position and for supporting said thread sensor bar against lateral vibrational movements caused by the running thread.

4,494,371

METHOD AND APPARATUS FOR YARN PIECING IN A RINGLESS SPINNING MACHINE

Takayuki Morita, Kariya; Takahiko Tsunekawa, and Hisao Amano, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 9, 1983, Ser. No. 521,601
Claims priority, application Japan, Aug. 12, 1982, 57-140161
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—263 **11 Claims**



1. A method of piecing a broken yarn from a yarn package on a rotatably mounted bobbin into a pneumatically operated spinning unit with which the bobbin is associated in a ringless spinning machine, comprising the steps of catching the free end and unwinding a length of said broken yarn from said yarn package, rewinding part of said length on to said yarn package at substantially a single location on the surface thereof whereby a finite length of said broken yarn extending from said location can be determined, cutting said length of broken yarn to provide a cut end thereof and thereby determining said finite length to be that length of said yarn between its said cut end and said location on said yarn package, introducing said cut end of the yarn into said spinning unit while unwinding a further predetermined length of said yarn from said location on said yarn package, and again winding said yarn from said spinning unit on to said yarn package.

4,494,372

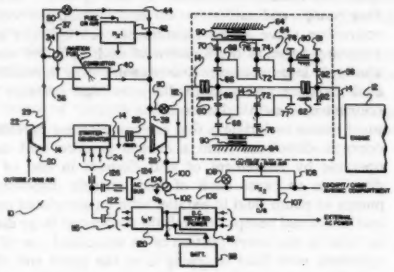
MULTI ROLE PRIMARY/AUXILIARY POWER SYSTEM WITH ENGINE START CAPABILITY FOR AIRCRAFT

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 10, 1983, Ser. No. 502,902
Int. Cl.³ F02C *7/268, 7/32*
U.S. Cl. 60—39.07 **8 Claims**

1. A multi role primary/auxiliary power system for an aircraft having at least one engine, said engine having a drive shaft, said power system comprising:

a turbine coupled to said drive shaft;
a compressor coupled to said drive shaft;
a motor/generator coupled to said drive shaft, said motor/-generator mounted between said compressor and said turbine;
first passage means coupling the outlet of said compressor to said inlet of said turbine;
a combustor mounted in said first passage means;



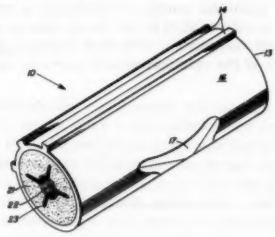
first clutch means mounted on said drive shaft adapted to disengage said motor/generator from said turbine;
a second passage means coupled to the outlet of said turbine and adapted to vent the output of said turbine overboard;
third passage means coupling said second passage means to the cabin of said aircraft; and
first valve means mounted in said second passage means adapted to close off the flow overboard in said second passage means and direct it to said third passage means.

4,494,373

FAIL SAFE ROCKET MOTOR

Ronald F. Vetter; Theodore A. Hicks, and Warren R. Compton, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1982, Ser. No. 378,580
Int. Cl.³ F02K 9/00
U.S. Cl. 60—253 **4 Claims**



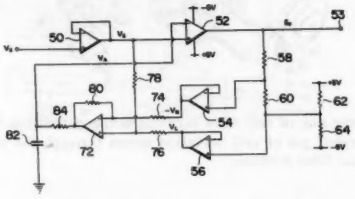
1. A rocket motor having a reduced likelihood of explosion in an external fire and comprising a cylindrical casing having a predetermined segmental portion extending axially along the casing and having a predetermined peripheral area which is disposed diametrically oppositely from said portion and is disposed centrally thereof in a direction axially along the casing; a thermally protective coating substantially covering the remainder of the periphery of the casing so that said area is thermally unprotected by the coating; a rib fixedly connected to said portion and extending therealong axially of the casing to stiffen said portion against bending in a plane passing through said portion and said area; and a propellant grain surrounded by the casing, so that when the casing is subjected to such a fire, stress is generated in the casing at said area to cause a rupture of the casing thereat.

4,494,374

AIR/FUEL RATIO MONITORING SYSTEM IN IC ENGINE USING OXYGEN SENSOR

Tsuyoshi Kitahara, Yokohama; Kohki Sone, Tokyo, and Masaaki Uchida, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jan. 27, 1983, Ser. No. 461,475
Claims priority, application Japan, Jan. 29, 1982, 57-12642
Int. Cl.³ F01N 3/20
U.S. Cl. 60—276 **5 Claims**



1. In a system for monitoring an air/fuel ratio of air-fuel mixture supplied to an internal combustion engine, the system having an oxygen sensor of the concentration cell type disposed in an exhaust passage of the engine, the oxygen sensor having a laminate comprising an inner electrode layer, a microscopically porous layer of an oxygen ion conductive solid electrolyte and an outer electrode layer exposed to an exhaust gas for producing an output which varies between a high-level voltage signal when the air/fuel ratio is below stoichiometric and a low-level voltage signal when the air/fuel ratio is above stoichiometric, and judgement means for producing an air/fuel ratio signal indicative of whether the air/fuel ratio is above or below stoichiometric by comparing the output of the oxygen sensor with a reference voltage,

said judgement means comprising a modulating means for producing a modulated voltage signal by subtracting a first predetermined voltage from the output of said oxygen sensor when said air/fuel ratio signal indicates that the air/fuel ratio is below stoichiometric and by adding a second predetermined voltage to the output of said oxygen sensor when said air/fuel ratio signal indicates that the air/fuel ratio is above stoichiometric, and smoothing means for smoothing said modulated voltage signal to produce a smoothed voltage and for supplying said smoothed voltage to said judgement means as said reference voltage.

4,494,375

FILTRATION SYSTEM FOR DIESEL ENGINE EXHAUST-I

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County, and Wallace R. Wade, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 3, 1983, Ser. No. 463,688
Int. Cl.³ F01N 3/02
U.S. Cl. 60—296 **12 Claims**

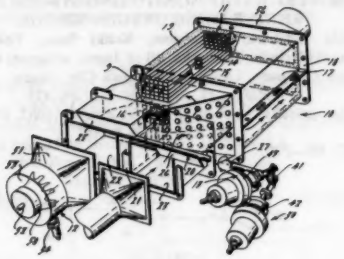
1. A filtration system operative to remove oxidizable particulates from the exhaust gas of a diesel engine, comprising:

(a) filtration means having a filter element operative to filter out and collect a substantial portion of the entrained particulates in the exhaust gas;

(b) oxidation means for conducting a flow of gas, heated by a source of energy, through at least a portion of said filter element and effective to ignite said particulates in that portion; and

(c) flow control means having walls dividing said filter element into first and second portions, and having a flow

diverter effective to normally permit full exhaust gas flow through both of said filter portions, and simultaneously effective to selectively permit exhaust gas flow through



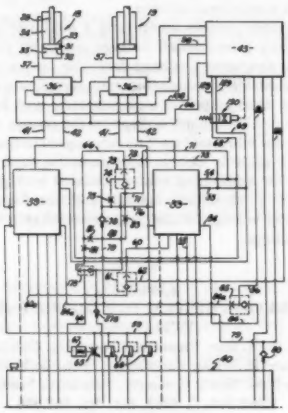
only one of said filter portions while permitting flow of heated gas of said oxidation means through the other of said filter portions.

4,494,376

FLUID ACTUATED JACK MECHANISM

Ronald E. Beaufort, Laguna Niguel, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Jul. 20, 1981, Ser. No. 284,672
Int. Cl.³ F15B *13/042, 13/06;* F16H *39/46;* E21B *19/08*
U.S. Cl. 60—421 **17 Claims**



1. Jacking mechanism comprising:

two vertically extending cylinders to be received at different sides of a well pipe;

pistons reciprocable vertically within said cylinders by pressure fluid and having upwardly projecting rods;

a first gripping unit adapted to releasably engage and support a well pipe and retained against vertical movement relative to said cylinders;

a second gripping unit adapted to releasably engage and support the pipe and movable vertically relative to said first unit with said rods to jack the pipe vertically;

said pistons having downwardly facing areas exposed to said fluid which are greater than the effective upwardly facing areas thereof;

two power driven reversible variable displacement pumps operable to pump fluid with a positive displacement action in opposite directions and adjustable to vary the displacement in each of said directions;

two additional positive displacement pumps;

fluid reservoir means;

a system of conduits connected to said cylinders and said four pumps and said reservoir and including a variable restriction valve at the location of each cylinder and a reversing valve at the location of each cylinder, and including a large diameter low pressure hose connected to each cylinder and a small diameter high pressure hose connected to each cylinder; and

control means including a first control element movable in opposite directions from a central position and means operable by movement of said element in one of said directions to cause each of said variable displacement pumps to pump fluid in parallel with an associated one of said additional pumps through the associated large diameter hose to the lower portion of an associated one of said cylinders, with fluid returning from the upper end of the cylinder through the associated small diameter hose to the suction side of the variable displacement pump, and by movement of said element in the opposite direction to cause each variable displacement pump not operating in parallel with said associated additional pump to discharge fluid in a reverse direction through the associated one of said small diameter hoses to the upper end of the associated cylinder, with fluid discharging from the lower end of the cylinder through the associated larger diameter hose to said reservoir means, with the displacement of said variable displacement pump increasing progressively in accordance with the extent of movement of said first control element from said central position, and with said variable restriction valve offering restriction to the flow of fluid from the lower ends of said cylinders to said large diameter hoses, and said first control element acting to progressively open said variable restriction valves in correspondence with the extent of movement of said first control element from said central position;

said control means including a second control element operable to reverse connections to said cylinders and cause said variable displacement pumps not operating in parallel with said additional pumps, to discharge in said reverse direction to deliver fluid to the lower ends of said cylinders beneath said pistons, with fluid discharging from the upper ends of the cylinders to said reservoir means.

4,494,377

BRAKE BOOSTER OPERATED ALSO BY SOLENOID

Yasuo Sato, No. 11, Kizukuri-cho, Gifu-shi, Gifu-ken, Japan

Filed Aug. 12, 1983, Ser. No. 522,708
Int. Cl.³ B60T *13/74*
U.S. Cl. 60—545 **8 Claims**

1. A brake booster comprising:

(a) a body with a large chamber and a small chamber linked to each other,

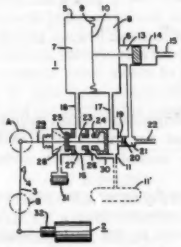
(b) a power piston movably positioned in the large chamber so as to divide it into a control chamber and a vacuum chamber,

(c) means for providing communication between said vacuum chamber and a vacuum source,

(d) a hydraulic piston provided in said small chamber to divide it into an oil pressure control chamber and a high pressure chamber, said hydraulic piston operatively coupled to move with the power piston,

(e) means for providing communication between said high pressure chamber which communicates with a fluid operated vehicle braking mechanism,

(f) a relay valve cylinder with one end exposed to the atmosphere and the other end communicating with a source of vacuum, means to permit communication between the source of vacuum and the control chamber via a control pipe,



(g) atmospheric air valve means and vaccum valve means provided in the relay valve cylinder and operable in response to brake operation to change the position of the cylinder vacuum valve means to permit communication between the control pipe and the vacuum chamber, each said valve means having valve seats, said relay valve cylinder including a valve piston connected to said atmospheric air valve means and said vacuum valve means,

(h) relay valve piston means for linking the atmospheric air valve means and the vacuum valve means,

(i) a solenoid having a movable solenoid plunger; and

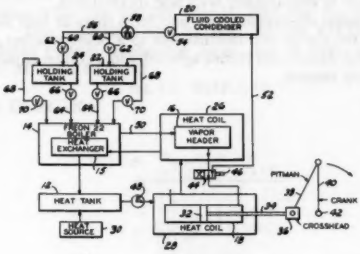
(j) lever means interconnecting said solenoid plunger and said relay valve piston means, said lever means pivotable about a fulcrum.

4,494,378
Patent Not Issued For This Number

4,494,379
VAPOR DRIVEN POWER SYSTEM

Lorrell C. McFarland, 417 E. 12, Claremore, Okla. 74017

Filed Apr. 21, 1983, Ser. No. 487,350
Int. Cl.³ F01K 25/10
U.S. Cl. 60—671 **3 Claims**



1. A self-contained heat energy conserving power system including a boiler containing a working medium boiling at a low temperature relative to water at atmospheric pressure, means for heating the boiler to a vapor producing temperature, a vapor driven engine connected with the boiler and a condenser interposed between the engine exhaust and boiler, the improvement comprising:

a heat exchanger within the boiler;

a first heat coil surrounding the engine and connected with the heat exchanger;

a heat tank connected between the heat exchanger and the first heat coil, said heat tank containing a fluid;

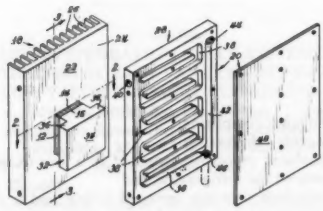
a heat source for heating said heat tank; and,

means for circulating hot fluid from said heat tank through said first heat coil and said heat exchanger.

4,494,380
THERMOELECTRIC COOLING DEVICE AND GAS ANALYZER

Ronald H. Cross, Hickory Corners, Mich., assignor to Bilan, Inc., Kalamazoo, Mich.

Filed Apr. 19, 1984, Ser. No. 602,193
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 **12 Claims**



1. A thermoelectric device comprising a thermoelectric element having a cold face and a hot face,

a heat-radiating device in heat-transfer with said hot face and having a flat, inner surface having a substantially greater area than the area of contact with said hot face and a thermal sink in heat-transfer contact with said cold face and comprising a flat, inner surface apposed to the flat, inner surface of said heat-radiating device and having an area substantially coextensive with the area of the flat, inner surface of the heat-radiating device; and

a conduit in heat-transfer with said thermal sink,

said conduit zig-zagging back and forth from an inlet adjacent the top of said thermal sink to a point adjacent the bottom thereof and thence upwardly to an outlet adjacent the top thereof.

4,494,381

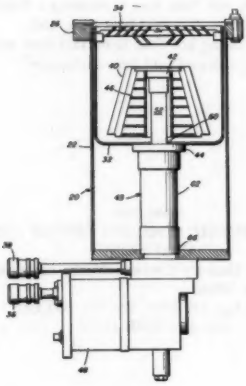
CRYOPUMP WITH IMPROVED ADSORPTION CAPACITY

Philip A. Lessard, Acton, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed May 13, 1983, Ser. No. 494,758

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **11 Claims**



1. A cryopump comprising:

a. a cryogenic refrigerator;

b. a condensing cryopanel mounted to a low temperature heat sink on the refrigerator; and

c. a honeycomb structure enclosed within said cryopanel, comprising an array of levels stacked along an axis, each level comprising a plurality of side-by-side chambers open radially from said axis with adsorbent material on their interiors, in thermal communication with said low temperature heat sink.

4,494,382

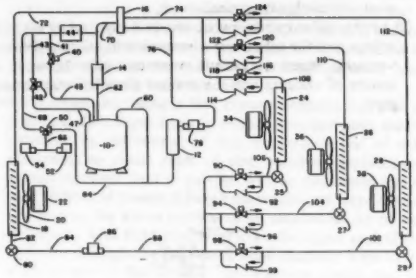
METHOD AND APPARATUS FOR CONTROLLING WHEN TO INITIATE AN INCREASE IN COMPRESSOR CAPACITY

Glendon A. Raymond, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,270

Int. Cl.³ F25B *13/00*

U.S. Cl. 62—160 **14 Claims**



1. A control for a refrigeration circuit including an outdoor heat exchanger, at least one indoor heat exchanger and an electric motor driven variable capacity compressor means which comprises:

current sensing means for sensing the current drawn by the motor driving the compressor;

logic means connected to the current sensing means for storing the value of the current flow detected by the current sensing means as a reference value;

comparator means for comparing the value of the current flow to the compressor motor after a delay interval to the value of current flow stored in the logic means, said comparator means generating an increase signal when a selected one of said values exceeds the other of said values; and

means for increasing the capacity of the compressor in response to the detection of an increase signal.

4,494,383

AIR-CONDITIONER FOR AN AUTOMOBILE

Hideaki Nagatomo; Hiroto Kawahira; Toshizo Nishizawa, and Mitsuo Yasuda, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1983, Ser. No. 468,992

Claims priority, application Japan, Apr. 22, 1982, 57-67857; May 12, 1982, 57-79444

Int. Cl.³ F25B *1/00*; B60H *3/04*

U.S. Cl. 62—196.2 **5 Claims**

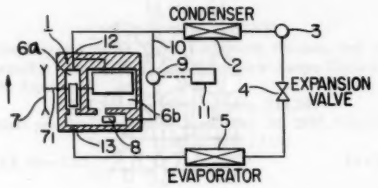
1. An air-conditioner system for dehumidifying and cooling the passenger compartment of an automobile, comprising:

a compressor means, a condenser and an evaporator connected in series in a refrigerating circuit;

said compressor means having a rotary shaft adapted to be directly connected to the engine of the automobile for being constantly driven thereby, having one large and one small displacement compressing element each having a different refrigerant compressing capacity, the compressing capacity of said small displacement compressing element being just sufficient for providing sufficient refrigerant for dehumidifying the passenger compartment, and

having refrigerant intake means for the respective large and small displacement compressing elements and a common refrigerant discharge connected to said condenser;

a refrigerant flow control valve means in said refrigerant intake means for the large displacement compressing element for controlling the amount of refrigerant sucked into said large displacement compressing element for causing the large displacement compressing element to



compress a predetermined amount of refrigerant over a period of time, the intake to said small displacement compressing element being unvalved; and

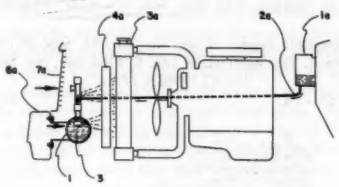
temperature setting control means connected to said refrigerant flow control valve means for controlling said refrigerant flow control valve means to provide an amount of refrigerant to said large displacement compressing element sufficient for cooling the passenger compartment to the set temperature.

4,494,384

APPARATUS FOR ENHANCING THE PERFORMANCE OF A VEHICLE AIR CONDITIONING SYSTEM

John Lott, Auburndale, Fla., assignor to Judy A. Lott, Auburndale, Fla.

Filed Nov. 21, 1983, Ser. No. 553,490
Int. Cl.³ F25B 47/00
U.S. Cl. 62—279 **1 Claim**



1. An arrangement for enhancing the performance of a vehicle air conditioning unit, said air conditioning unit including a condensor and an evaporator, said evaporator having a drain connected thereto for draining condensate collected therefrom, said arrangement comprising in combination:

(a) an elongated cylinder (1) having a defined upper portion with a water condensate inlet (8) in said upper portion, said inlet (8) including a tube connected to said evaporator drain; brackets (10) connecting the cylinder (1) to the front of the vehicle at a level below the level of the evaporator drain, the elongated cylinder (1) being of a lesser length than the width of the vehicle;

(b) air inlet units (4, 4') including pipes with an inlet flared mouth disposed to receive incoming air as the vehicle moves in the forward direction, said air inlet units extending out from said cylinder upper portion; and,

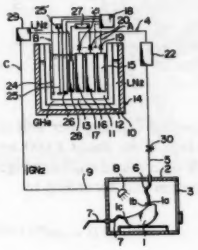
(c) spray units (3) extending out from said cylinder with spray heads facing the condenser whereby, condensate from the vehicle air conditioning unit evaporator drain enters the cylinder through said inlet (8) while outside air enters said cylinder through said inlet units so that the air forces the condensate in the cylinder out of the spray units (3) onto the air conditioning condenser so as to cool the freon therein.

4,494,385

METHOD OF PRESERVING ORGAN AND APPARATUS FOR PRESERVING THE SAME

Yasuo Kuraoka, and Nobuo Sakao, both of Sapporo, Japan, assignors to Hoxan Corporation, Sapporo, Japan

Division of Ser. No. 499,220, May 31, 1983, Pat. No. 4,462,215.
This application May 20, 1984, Ser. No. 615,212
Claims priority, application Japan, Jun. 4, 1982, 57-95896; Mar. 31, 1983, 58-56593
Int. Cl.³ B01F 3/04
U.S. Cl. 62—306 **4 Claims**



1. An apparatus for preserving a frozen organ comprising:

a perfusing and thawing unit, and

a heat insulating container capable of containing said organ,

said unit having a refrigerant tank containing the refrigerant such as Freon and thermally insulated,

a refrigerant temperature controlling mechanism capable of controlling the temperature of the refrigerant by a controller,

a gas supplying container supplied with the refrigerant from an organ refrigerant bomb dipped in the refrigerant for said tank,

an organ temperature controlling mechanism connected through a heat exchanger to a gas supply pipe, and

a liquid supplying mechanism for selectively flowing out the liquid to be flowed out from a first container for blood uniformly perfusing liquid such as choline, a second container for the refrigerating defect preventing agent such as dimethyle sulfoxide or glycerin, a third container for low solidifying point final perfusing liquid such as alcohol under the control of the controller to a liquid supply pipe,

said organ temperature controlling mechanism being connected via a pipe (9) to a nozzle in the container (2), and

said liquid supplying mechanism being connected to an artery or portal vein in the organ in the container (2) at the pipe and the vein of the organ being prolonged externally of the container via the exhaust pipe capable of being connected to the vein 1c of the organ.

4,494,386

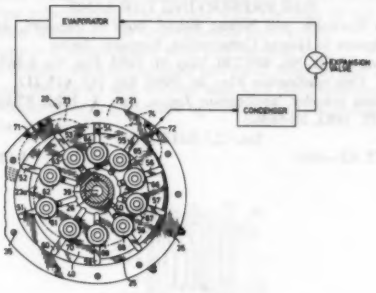
VAPOR REFRIGERATION CYCLE SYSTEM WITH CONSTRAINED ROTARY VANE COMPRESSOR AND LOW VAPOR PRESSURE REFRIGERANT

Thomas C. Edwards, Rockledge, Fla., Wayne C. Shank, Pima, Ariz., assignors to Rovac Corporation, Rockledge, Fla.

Filed Mar. 15, 1982, Ser. No. 358,056
Int. Cl.³ F25D 9/00
U.S. Cl. 62—402 **3 Claims**

1. A refrigeration system including a compressor, a condenser, an expansion valve and an evaporator with controls and interconnections to provide a system operating in a vapor refrigeration cycle, said system containing a refrigerant or combination thereof selected from a group of low vapor pres-

sure refrigerants having boiling points anywhere from about 10 degrees F. to 83 degrees F., said compressor comprising an open system constrained rotary vane compressor having a



ratio Q/D of cooling capacity per unit of displacement anywhere in the range from about 8,000 to 30,000 FT-LB per HR/FT^3 per HR determined by the refrigerant or combination thereof in the system and according to

$$Q/D = Ae^{B(T+460)}$$

where
(For 40 degree evaporator temperature)
$A = 2.2 \times 10^8$
e = natural logarithm base
$B = -.0189$
T = boiling point of refrigerant (degrees F.)

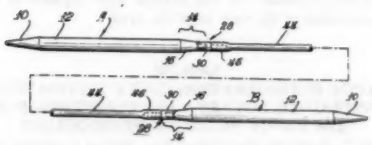
for medium capacity refrigeration, air conditioning and heat pump applications.

4,494,387

INTERCHANGEABLE KNITTING NEEDLE SYSTEM

Cornelius M. Phipps, and Cornelius M. Phipps, Jr., both of Glen Ellyn, Ill., assignors to Plastic Specialties, Inc., Glen Ellyn, Ill.

Filed Aug. 22, 1983, Ser. No. 525,221
Int. Cl.^{3} D04B *35/02*
U.S. Cl. 66—117 **6 Claims**



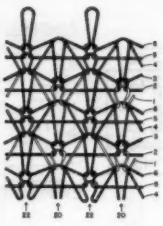
1. An interchangeable knitting needle system comprising at least one knitting needle having a tip, central shaft, and an opposite thread-engageable end including a resilient locking means capable of releasable securement with a tube adaptor, said tube adaptor having means for securing the locking means of the needle engageable end and further having at the opposite end thereof insertable tube engaging means, and at least one flexible tube.

4,494,388

KNIT CONSTRUCTION

Wing-Yan T. Lau, and Laylon E. Bradberry, both of Seneca, S.C., assignors to The Kendall Company, Walpole, Mass.

Filed Sep. 22, 1982, Ser. No. 421,110
Int. Cl.^{3} A41B *00/00*; D04B *11/00*
U.S. Cl. 66—178 A **15 Claims**



1. A knit construction having a repeating six-course, two wale pattern in which

said six courses include four courses comprising alternating knit and tuck stitches and two courses comprising alternating knit and non-knit stitches,

each of said wales includes the knit stitches of two of said courses of alternating knit and tuck stitches and one of said courses of knit and non-knit stitches, the tuck stitches of the other two of said courses of knit and tuck stitches, and the non-knit stitches of the other of said courses of knit and non-knit stitches, the non-knit stitches of the other of said courses being intermediate the tuck stitches of the other two of said courses, and

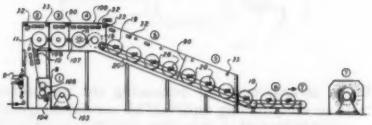
said courses comprising alternating knit and non-knit stitches are of elastomeric yarn.

4,494,389

CONTINUOUS SYSTEM FOR TREATING FABRICS

Richard K. Smejda, P.O. Box 344, Riverside, Paterson, N.J. 07544

Continuation-in-part of Ser. No. 306,081, Sep. 28, 1981, abandoned. This application Jan. 5, 1984, Ser. No. 568,436
Int. Cl.^{3} D06B *17/04*
U.S. Cl. 68—5 C **14 Claims**



1. A system for treating fabric comprising:

an enclosed chamber having an entrance and an exit and a plurality of stations therebetween;

fabric supply means for feeding fabric continuously into said chamber;

applicator means positioned in the path of said fabric for applying solutions to said fabric;

take-up means at a first station within said chamber adjacent said entrance for winding said fabric into rolls;

means within said chamber for applying heat and steam to the rolls of fabric;

means for feeding successive rolls of fabric along said chamber and for holding respective rolls within selective stations for predetermined time intervals;

a second rest station for permitting further application of heat and steam to said roll;

a third rewind station including means for rewinding fabric from a first roll onto a second roll and means for subjecting said second roll to additional heat and steam capable of

maintaining a predetermined temperature to provide uniform heat and moisture throughout the roll;

a fourth station including gravity drive means for holding and moving a plurality of rolls successively toward said exit while continuing application of said heat and steam on said rolls; and

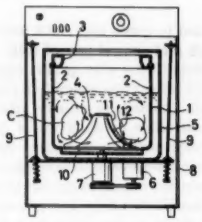
means for holding said rolls upon exiting from said chamber.

4,494,390

WASHING MACHINE

Gentaro Hayashi, Shiga; Kenji Yamamoto, Kusatsu, and Takao Kuraseko, Otsu, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jul. 15, 1983, Ser. No. 514,241
Claims priority, application Japan, Jul. 20, 1982, 57-127170
Int. Cl.³ D06F *23/04, 17/10*
U.S. Cl. 68—23.7 **10 Claims**



1. A washing machine comprising a cabinet, a basket having a bottom, said basket being mounted in said cabinet, an agitator rotatably mounted on said bottom of said basket, and drive means for rotating said agitator, wherein said agitator is comprised of a substantially disk-shaped base having a predetermined outside diameter and an outer circumferential edge, a projection in the form of a substantially triangular prism having side ridges at the edges of said prism, integrally extending from a substantially central portion of said base, and three vanes integrally extending smoothly from said side ridges of said projection over said base, said projection having a height which is about ½ of said outside diameter and an upper end positioned below at least the level of water in said basket at the time the water is held at rest, said drive means comprising rotating means for rotating said agitator at a speed of 300 rpm or less and rotation switching control means for rotating said agitator alternately clockwise and counterclockwise.

4,494,391

AUTOMOBILE SECURITY DEVICE FOR STEERING COLUMN IGNITION LOCKS

Joseph E. Solow, Plainview, N.Y., assignor to Wolo Manufacturing Corporation, Deer Park, N.Y.

Continuation of Ser. No. 236,878, Feb. 23, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,850
Int. Cl.³ E05B *17/14*
U.S. Cl. 70—428 **9 Claims**

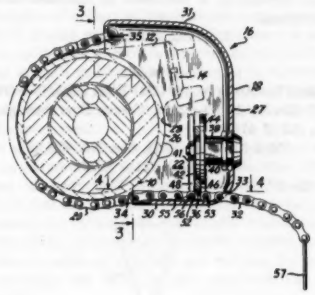
1. An automobile security device for protecting a steering column ignition lock comprising:

a cover having opposed ends, a top wall arranged at one end, a bottom wall arranged at the other end, opposed side walls, extending between said top and bottom walls, with arcuate edges adapted to wrap around a portion of the steering column, wherein said cover has a hollow interior adapted to fit over an ignition lock, wherein said bottom wall has an interior wall surface and is spaced from said arcuate edges to define a first opening for inserting a tension-bearing element into said interior to extend longitudinally along said surface, and wherein said cover has a second opening longitudinally spaced from said first opening for passing the tension-bearing element therethrough, out from said interior;

an elongate, flexible tension-bearing element attached to said one end, wherein said element has a plurality of recesses spaced along its length and has a free end adapted to be inserted into said first opening, to extend along said interior wall surface, and to extend out through said second opening;

back stop means fixed on said wall surface and arranged for selectively engaging at least one of said recesses for preventing longitudinal movement of said element; and

a cover lock mechanism comprising: (a) a lock mounted to a



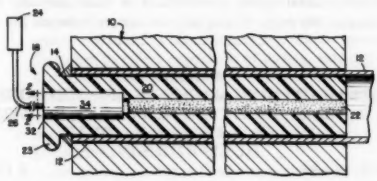
portion of said cover spaced from said bottom wall, (b) bolt means actuatable by said lock comprising a bolt movable toward and away from said bottom wall between an engaged position, for locking said back stop means in engagement with a recess of said element, and a disengaged position, for permitting said tension-bearing element and said back stop means to disengage, wherein in said disengaged position said tension-bearing element may be moved freely in its longitudinal direction and inserted or removed from the interior of said cover; and wherein said bolt further includes at least one projection for selectively engaging a recess of said tension-bearing element when said bolt is moved to said engaged position.

4,494,392

APPARATUS FOR FORMING AN EXPLOSIVELY EXPANDED TUBE-TUBE SHEET JOINT INCLUDING A LOW ENERGY TRANSFER CORD AND BOOSTER

Joseph W. Schroeder, Clark, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 19, 1982, Ser. No. 442,985
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—56 **13 Claims**



1. Apparatus for expanding a tube into a bore formed in a tube sheet, comprising primary explosive means containing a relatively high number of grains of explosive per unit length and extending within said tube coextensive with that portion of the tube to be expanded; an annular force transmitting member extending between said primary explosive means and said tube for transferring to said tube the energy resulting from the

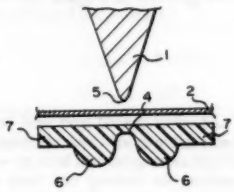
explosion of said primary explosive means; detonator means disposed externally of said tube; an energy transfer cord extending between said detonator means and said primary explosive means, said energy transfer cord including a relatively low number of grains of explosive per unit length which are insufficient to detonate said primary explosive means, and a sheath covering said latter grains of explosive, and being constructed and arranged to contain the debris and gases associated with the explosion of said latter grains of explosive; and booster means extending between said energy transfer cord and said primary explosive means, said booster means containing an explosive which is detonatable by said energy transfer cord and, upon exploding, is sufficient to detonate said primary explosive means.

4,494,393

APPARATUS AND METHOD FOR PRESS FORMING

George T. Bruce, 21 Christina Cresc., Scarborough, Ontario, Canada (M1R 4H7)

Filed Mar. 10, 1983, Ser. No. 473,955
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—57 **8 Claims**



6. A method for press forming at least one angle in a flat metal blank comprising interposing the metal blank between a male die shaped to conform to an inside dimension of the angle and a female die of resilient elastomeric material bendable along a longitudinal line corresponding to an apex of the angle and having at least one longitudinal reinforcing rib on each of opposite longitudinal halves thereof at opposite sides of the line at a surface of said female die facing away from the metal blank; and

pressing the male die towards the female die to press the blank therebetween and thereby causing the opposite longitudinal halves of said female die to hinge, with said ribs, in opposite directions about the longitudinal line and to conform to the outside dimensions of the angle as sidewalls for the female die, the female die being deformed at the area of the longitudinal line without substantial deformation of the opposite longitudinal halves;

whereby metal of the metal blank at least partially flows around the angle in response to action between the dies.

4,494,394

STRAIGHTENING MACHINES AND METHODS

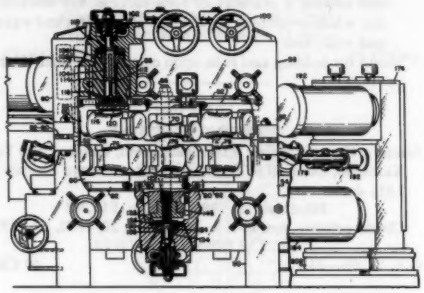
Einar W. Nilsson, 705 E. Curtin St., Bellefonte, Pa. 16823

Filed Jul. 6, 1981, Ser. No. 280,372
Int. Cl.³ B21D *3/04*
U.S. Cl. 72—98 **8 Claims**

1. A cross-roll straightener that advances stock in rotary motion along a curved pass line, said straightener comprising:

a central pair of rolls forming a curved pass, said rolls oppositely skewed with respect to the pass line of said cross-roll straightener, the rolls of said central pair being of generally unequal diameter and oriented to flex said stock; and

two end pairs of rolls, arranged adjacent opposite ends of said central pair, the rolls of said end pairs being oppositely skewed with respect to the pass line of said cross-roll straightener, said end pairs of rolls oriented to restrain



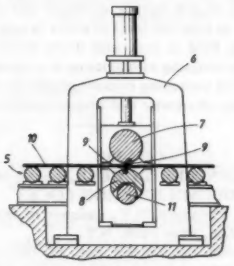
said stock and to guide said stock into wedge supportive relation with said central pair of rolls.

4,494,395

HOT-ROLLING PLANT

Franz Brettbacher, Linz, and Buchegger Rudolf, St. Florian, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 22, 1983, Ser. No. 468,084
Claims priority, application Austria, Mar. 5, 1982, 870/82
Int. Cl.³ B21B *1/00*
U.S. Cl. 72—203 **3 Claims**



1. In a hot-rolling plant comprising

a forward reversible coiler,

a rear reversible coiler,

reversible finish-rolling means disposed between said forward and rear reversible coilers, and

crop shears including an upper cutter cylinder and a lower cutter cylinder, which are mounted for rotation about upper and lower axes of rotation, respectively,

the improvement residing in that

said crop shears are disposed between said finish-rolling means and one of said coilers and

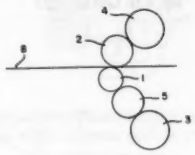
a backing roller for supporting stock to be rolled is mounted on said lower cutter cylinder for rotation about an axis which is parallel to said lower axis of rotation.

4,494,396

MULTISTAGE ROLLING MILL WITH FLATNESS CONTROL FUNCTION

Toshio Iwanami, Yokohama, and Hajime Watanabe, Yokosuka, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 25, 1982, Ser. No. 361,970
Claims priority, application Japan, Apr. 2, 1981, 56-49960
Int. Cl.³ B21B *31/16, 31/32*
U.S. Cl. 72—243 **4 Claims**



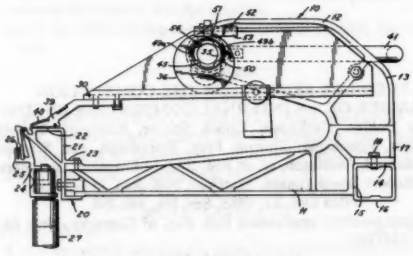
1. A multistage rolling mill with flatness control function comprising upper and lower work rolls, one of said work rolls being substantially smaller in diameter than the other work roll, upper and lower back-up rolls, said work rolls being driven, whereby rolling at different speeds is effected, said work roll of smaller diameter being offset in a rolling line with respect to axes of the upper and lower back-up rolls, an intermediate roll between said work roll of smaller diameter and the back-up roll of said work roll of small diameter, a vertical bending device provided for each of said work rolls and said intermediate roll, and a horizontal bending device for bending said work roll of smaller diameter horizontally; said other work roll and said intermediate roll being offset in the rolling line with respect to the axes of the upper and lower back-up rolls with said small diameter work roll, said intermediate roll and said back-up roll associated with said small diameter work roll all being arranged to have axes of rotation in a common plane.

4,494,397

PORTABLE SHEET BENDING BRAKE

James J. Rhoades, Garden City, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 359,566, Mar. 18, 1982,. This application Sep. 24, 1982, Ser. No. 423,459
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—320 **6 Claims**



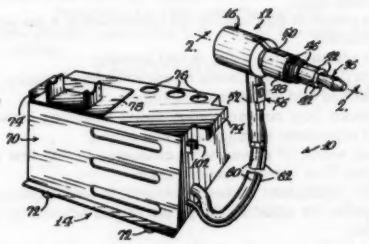
1. A sheet bending brake comprising
a plurality of generally C-shaped frame members,
each said frame member including a long arm and a short arm spaced from the long arm,
spaced rails connecting said frame members,
a first member mounted on said long arms defining a clamping surface extending longitudinally,
a second bending member,
means hinging the bending member to said first member,
a bar individual to each said frame member and having its rear end pivoted to said frame member,
a clamping member extending longitudinally of said sheet bending brake and fixed to said bars,
each said bar being generally C-shaped and including spaced upper and lower flanges and a wall connecting said flanges,
a shaft journalled in the forward ends of the short arms of the C-shaped members and extending through openings in the walls of said bars,
said shaft having longitudinally extending circumferentially spaced grooves extending throughout the effective length of said shaft,
a plurality of collars at longitudinally spaced points on said shaft having radial teeth complementary to said grooves,
a cam individual to each said collar on said shaft and individual to each said bar and positioned to cooperate with the lower flanges such that rotation of said shaft pivots said bars and, in turn, said clamping member into and out of clamping position,
each said collar and its respective cam having a plurality of circumferentially spaced axially extending teeth whereby the cams are held in circumferentially adjusted position such that the position of a cam can be adjusted circumferentially by moving the cam axially relative to the teeth on the collar to disengage the teeth, rotating the cam to the desired adjusted position and moving the cam axially to re-engage the teeth on the cam with the teeth on the collar.

4,494,398

TUBING EXPANDER APPARATUS

Edward J. Svoboda, Hinsdale, Ill., assignor to Midas International Corporation, Chicago, Ill.

Filed Feb. 14, 1983, Ser. No. 465,916
Int. Cl.³ B21D *39/08*
U.S. Cl. 72—393 **15 Claims**



1. An apparatus for expanding tubing, comprising:
an expander unit including single-acting fluid-operated motor means, and outwardly movable, expansion jaw means operable by operation of said motor means in a first direction to effect expansion of tubing, said expander unit including biasing means for effecting movement of said motor means in a second direction opposite said first direction;
a pressurized fluid supply unit for providing a source of pressurized fluid;
conduit means joining in fluid communication said expander unit and said fluid supply unit for providing said motor means with pressurized fluid; and
electrical switch means associated with said expander unit for remotely operating said fluid supply unit;
said fluid supply unit comprising electrically powered fluid pump means adapted for continuous operation, and solenoid-operated valve means operatively connected with said electrical switch means for controlling the supply of pressurized fluid to said expander unit from said pump

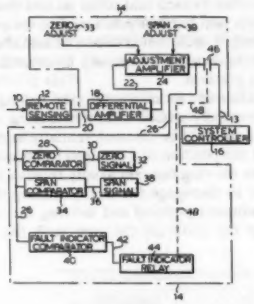
means via said conduit means, whereby actuation of said solenoid-operated valve means effects supply of pressurized fluid from said continuously operating pump means to said single-acting motor means of said expander unit for effecting tubing expansion, said biasing means effecting movement of said motor means in said second direction upon completion of tubing expansion.

4,494,399

TOXIC GAS DETECTION SYSTEM CALIBRATOR

George Youngman, Park Ridge, N.J., assignor to Becton, Dickinson & Co., Paramus, N.J.

Filed Nov. 10, 1982, Ser. No. 440,773
Int. Cl.³ G01N *27/26*
U.S. Cl. 73—1 G 6 Claims



1. Calibrator apparatus for recalibrating electrochemical gas sensors, comprising

(a) a housing;

(b) a source of power;

(c) an input in said housing for connection to a gas sensor sensing head;

(d) an output in said housing for connection to a gas sensor controller;

(e) an adjustment amplifier in said housing;

(f) first flow communication means extending between said input and said adjustment amplifier;

(g) second flow communication means extending between said adjustment amplifier and said output;

(h) said source of power being connected to said first and second flow communication means;

(i) span adjustment means connected to said adjustment amplifier for adjusting the output of said adjustment amplifier;

(j) zero adjustment means connected to said adjustment amplifier for adjusting the output of said adjustment amplifier;

(k) pre-set zero comparator means connected in said second flow communication means for producing a first output signal when the adjusted output of said adjustment amplifier in response to said zero adjustment means lies within first predetermined limits and a second output signal when said adjusted output lies out of said first limits;

(l) pre-set span comparator means connected in said second flow communications means for producing a first output signal when the adjusted output of said adjustment amplifier in response to said span adjustment means lies within second predetermined limits and a second output signal when said adjusted output lies out of said second limits;

(m) first indicator means connected to said pre-set zero comparator means for producing a characteristic indication responsive to the production of a said first output signal by said zero comparator means; and

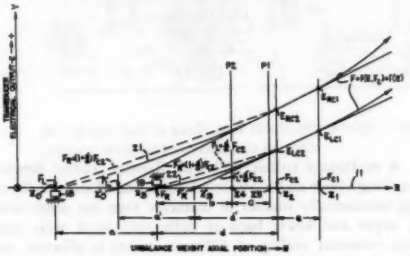
(n) second indicator means connected to said pre-set span comparator means for producing a characteristic indication responsive to the production of a said first signal by said span comparator means.

4,494,400

WHEEL BALANCER TWO PLANE CALIBRATION APPARATUS AND METHOD

Jerry M. Hill, North Little Rock, Ark., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 28, 1983, Ser. No. 518,164
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—1 B 15 Claims



4. A method of calibrating a dynamic balancing machine for detecting mass unbalance in objects mounted on a rotatably driven machine shaft, wherein a pair of sensors are spaced along and coupled to the shaft and provide outputs indicative of unbalance during shaft rotation, and wherein the sensor outputs are coupled to a computer which provides unbalance force magnitude and phase information, comprising the steps of

mounting a known mass at a known radius and a first known axial position on the shaft,

spinning the shaft a first time,

storing the sensor outputs,

mounting a known mass at a known radius and a second known axial position on the shaft,

spinning the shaft a second time,

computing the apparent axial separation between the sensors and the apparent axial positions of the sensors utilizing the outputs obtained from the first and second shaft spins, whereby magnitude and phase information with reduced error content may be detected relative to unbalance mass in machine shaft mounted objects at predetermined axially located planes.

4,494,401

PRESSURE SENSOR FOR THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Klaus Dobler, Gerlingen; Ulrich Schoor, Stuttgart; Rudolf Heinz, Renningen; Thomas Frey, Friolzheim, and Werner Grünwald, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

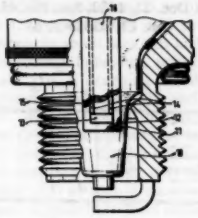
Filed Oct. 11, 1983, Ser. No. 540,296
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243743
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 14 Claims

1. Pressure sensor to determine pressures within the combustion chamber of an internal combustion engine having a plug element including a ceramic portion adapted for introduction into the combustion chamber of the internal combustion engine,

and a sensor element (13, 21) comprising a layer-like resistor made of a material which, under influence of pressure to

which the resistor is exposed, changes its resistance, supported on the plug element

wherein, in accordance with the invention,



the layer-like pressure-sensitive resistor is formed as a layer on the surface of the ceramic portion of the plug element.

4,494,402

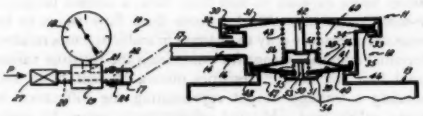
DEVICE AND METHOD FOR PRESSURE TESTING

Patrick T. Carney, 3127 Lantern Trail, Richmond, Ind. 47374

Filed Sep. 7, 1982, Ser. No. 414,979

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—40 **11 Claims**



1. A pressure testing device for testing the fluid tightness of an engine cooling system, the engine cooling system having a filler neck formed to provide an open mouth circumscribed by an outer seat, the filler neck further providing an inner seat, and an overflow vent between the seats, said filler neck having an interior chamber between said seats, and a pressure-type cap sealingly engageable with the outer seat of the filler neck to secure the top to the neck in spanning relation to the mouth thereof, and sealingly engageable with the inner seat of the filler neck, thereby forming outer and inner seals therewith, the cap further including a vacuum valve operative as a bypass of pressure from the interior chamber of said filler neck through said cap into the engine cooling system, comprising:

a conduit,

means for connecting the conduit to the vent of the filler neck,

a source of pressure for the conduit,

means for determining the level of pressure within the conduit.

4,494,403

FILTER TESTING APPARATUS AND METHOD

Cecil W. Bowers, Chocowinity; Ivey G. Thompson, and Thomas T. Allan, both of Washington, all of N.C., assignors to Flanders Filters, Inc., Washington, N.C.

Filed Jul. 14, 1982, Ser. No. 398,405

Int. Cl.³ G01M *3/20*

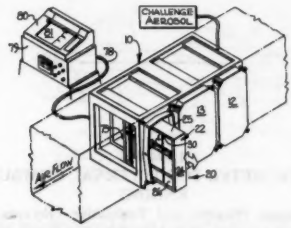
U.S. Cl. 73—40.7 **29 Claims**

1. An apparatus adapted for detecting minute leaks of unfiltered air through an air filter, and which is characterized by the ability to scan the full area of the face of an adjacent filter and so as to permit the collection and sampling of air passing through a relatively small portion of the total area of the face of the filter at any given movement, and comprising

a generally rectangular frame which is sized to generally conform to the outline of a filter to be tested, and which defines a lateral direction extending between one pair of opposite sides, a transverse direction extending between the other pair of opposite sides, and a longitudinal direction extending through the frame and perpendicular to the lateral and transverse directions,

an air sampling probe having an air receiving open end, with the area of the open end being substantially less than the area defined within said frame,

means mounting said probe to said frame with said probe open end facing in the longitudinal direction and so as to be adapted to open toward the face of an adjacent filter,



and including drive means for sequentially traversing the probe in each lateral direction across the frame, and indexing the probe in the transverse direction a distance not greater than the transverse dimension of said open end of said probe and so that the entire face of an adjacent filter may be scanned by the probe, and

means for conveying air received in the open end of said probe to a remote location for continuous analysis or the like.

4,494,404

FUEL-CONSUMPTION MONITORING SYSTEM FOR MOTOR VEHICLES WITH MANUALLY-SHIFTED TRANSMISSIONS

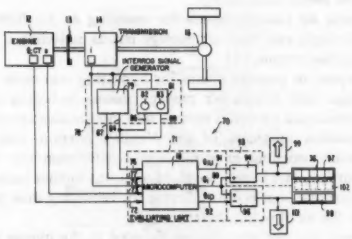
Paul Strifler, Dettingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,058

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145687

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—113 **14 Claims**



1. A fuel consumption monitoring system for motor vehicles with manually shifted transmissions, equipped with a processing and evaluating means for generating an output signal correlated with the instantaneous fuel consumption of the vehicle, and with an indicating means for emitting an indicating signal informing the driver of the fuel utilization to be expected if another gear were selected, the processing, evaluating and indicating means generating the output signal from a processing operation involving data which are specific to the vehicle and are stored in an electronic read only memory in the evaluating means, and data characterizing the fuel consumption and the operating condition of the propulsion unit of the vehicle, the processing and evaluating means receiving interrogating

signals which indicate possible transmission ratios for a change of gear, the evaluating means comprising

means for generating a response signal as a measure of at least one of the fuel consumption reduction and the fuel consumption increase which would be obtained if, at an engine power which remains constant, the gear ratio signalled by the interrogating signal in question were to be engaged, instead of the gear ratio currently engaged, and

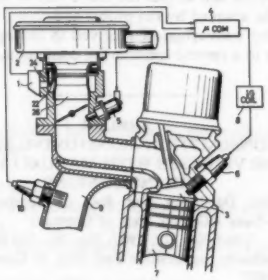
indicating means for displaying a response signal proportional to the consumption difference.

4,494,405

AIR-FLOW METER FOR INTERNAL COMBUSTION ENGINE

Minoru Oosuga, Hitachi, and Yoshishige Ohyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,321
Claims priority, application Japan, Aug. 10, 1981, 56-124059
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **8 Claims**



1. An air-flow meter for an internal combustion engine, the air flow meter comprising:

a main air passage means for enabling an air flow therethrough, said main air passage means including a Venturi portion means;

a bypass air passage means for bypassing said main air passage, said bypass air passage means including an inlet means and an outlet means, said inlet means opening at a position upstream of the Venturi portion, said outlet means opening at a position downstream the Venturi portion, said bypass air passage means further including at least one bent portion therein for removing dust particles in the air flowing therethrough;

at least one hot wire means disposed in the bypass passage means at a position downstream of said bent portion, said hot wire being adapted to change resistance in dependence upon an amount of air flow in said bypass passage means;

means for detecting the change of resistance of said hot wire means and for measuring the amount of air flow;

means for maintaining a surface temperature of said hot wire at 100° C. or above; and

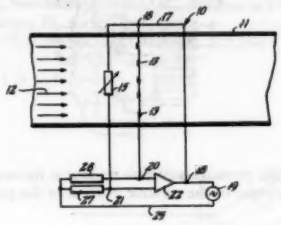
wherein said bent portion has an entrance width D, said hot wire means has a diameter d, and wherein a ratio of d/D is such that collision of dust in the air flowing through said bypass passage means against said hot wire means is substantially prevented.

4,494,406

MEANS FOR MEASURING LARGE AREA MASS FLOW

Michael Komons, Peapack; Donald F. Wiseman, Bernardsville, both of N.J., and Andreas I. Galanis, Edgewood, Md., assignors to Ebtron, Inc., Somerset, N.J.

Filed Dec. 23, 1982, Ser. No. 452,790
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **1 Claim**



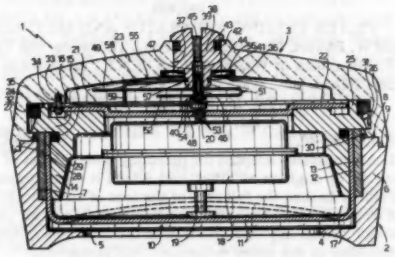
1. In an improved means for measuring fluid flow over a large cross-sectional area of a conduit including a plurality of first temperature-sensitive electrical resistors connected in series, and located within said area at various locations in a given plane perpendicular to the direction of fluid flow, said resistors being exposed to said fluid flow; a second temperature-sensitive resistor shielded from fluid flow so as to be temperature sensitive only to changes in ambient temperatures, differential amplifier means for comparing the resistive values of said first and second resistors during current flow, and producing a voltage output representing the difference in resistive values; and calibrated galvanometer means for reading said difference in resistive values in terms of fluid flow; the improvement comprising: a frame assembly corresponding in configuration to the cross-sectional area of the conduit and including a plurality of support members interconnected substantially at mutual right angles, at least some of which supports said first resistors at generally uniformly spaced intervals; said resistors being in the form of thermistor beads, said support members having leading and trailing edges, relative to the direction of fluid flow, said trailing edges having recesses therein, said thermistor beads being located within said recesses to be thereby shielded from particulate matter in fluid passing over said support member.

4,494,407

DEPTHOMETER FOR UNDERWATER DIVING

Emilio Allemano, Via Rosalino Pilo, 4, 10143 Torino, Italy

Filed May 10, 1982, Ser. No. 376,332
Claims priority, application Italy, Nov. 4, 1981, 68421 A/81
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—300 **8 Claims**



1. A depthometer for underwater diving, comprising a cup-

shaped casing (2); a front cover (3) snap-coupled axially to said casing (2) in a fluid-tight manner and rotatable relative thereto about its own axis; a pressure measuring device (18) arranged within said casing (2) to determine the pressure of the external environment; a dial (22) angularly rigid with said cover (3); an indicating pointer (21) operated by said pressure measuring device (18) and rotatable about said axis and along a scale of said dial (22); a maximum-indicating pointer (49) supported rotatable about said axis; a dragging member (55) disposed between said indicating pointer (21) and said maximum-indicating pointer (49); a tubular member (38) extending through said cover (3) and comprising an axial bore (44); and removable closure means (45) closing said bore (44) in a fluid-tight manner; said dragging member (55) being supported by said tubular member (38) in such a manner as to rotate idly about said axis; and adjustable friction means (54) being provided to connect said maximum-indicating pointer (49) to said tubular member (38) in a rotatable manner.

4,494,408

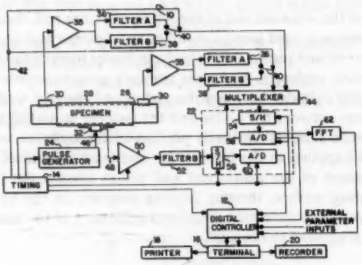
METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF COMPOSITE MATERIALS

Thomas J. DeLacy, Los Altos, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jul. 27, 1982, Ser. No. 402,450

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—587 **22 Claims**



1. A method for observing potential dimensional stability of plastic composition of thermosetting material comprising the steps of:

monitoring passive and injected acoustic signals from said composition during formation of a solid state of said composition;

generating a signature over time from said acoustic signals, said signature being uniquely characteristic of said composition; and

analyzing said signature to correlate with known residual stress relief mechanisms and resultant residual stress levels of said composition.

4,494,409

ENGINE VIBRATION SENSOR

Haruyoshi Kondo; Koji Tsukada, and Masaharu Takeuchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 26, 1982, Ser. No. 382,305

Claims priority, application Japan, May 29, 1981, 56-80020; Jun. 16, 1981, 56-88334

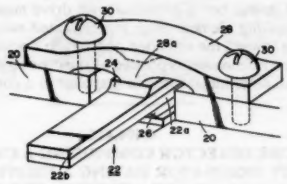
Int. Cl.³ G01L *23/22*; G01H *1/08*

U.S. Cl. 73—651 **22 Claims**

1. An engine vibration sensor comprising:

a vibrator for resonating at a specific frequency of vibration of an engine to which it is attached, said vibrator being composed of a pair of piezoelectric plates attached to each other, each of said piezoelectric plates having a constant thickness and having a root and a vibrator element;

means for relatively increasing the cross-sectional area of said root to make the second moment of area of said root larger than that of said vibrator elment, said means for increasing the cross-sectional area being a pair of auxiliary supporters provided on upper and lower surfaces of said vibrator at said root thereof, for increasing the thickness of said root to make the second moment of area of said root larger than that of said vibrator element to thereby equalize the stress on said upper auxiliary support and prevent said vibrator from being damaged;



a base to be connected to an engine body; and

a clamp for retaining said root firmly between said clamp and said base, said clamp having a projection in the center portion thereof along said vibrator for retaining said root of said vibrator to thereby prevent said vibrator from being damaged to due stress concentration;

thereby preventing a change in the effective length of said vibrator element and stabilizing the characteristics of the resonant frequency of said vibrator.

4,494,410

CONVERTOR APPARATUS FOR ACCURATE AND CONSISTENT NON-DESTRUCTIVE TESTING OF OBJECTS

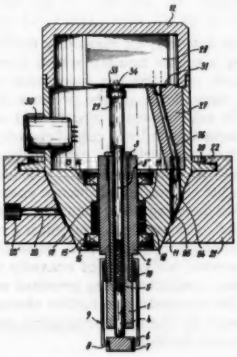
Gijsbertus F. J. Van Bochove, Vlaardingen, and Petrus A. A. M. Somers, Alphen A/D Rijn, both of Netherlands, assignors to Fokker B.V., Netherlands

Filed Feb. 16, 1983, Ser. No. 466,838

Claims priority, application Netherlands, Feb. 16, 1982, 8200586

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—644 **15 Claims**



1. A convertor for converting electrical vibrations into mechanical vibrations for non-destructive testing of objects, in particular, bonded joints between a plurality of sheets or between sheets and a honey comb structure, comprising a polycrystalline, piezo-electric member, which is provided with mutually insulated electrodes on its first and second head faces, said member being suspended and secured into a supporting element, said supporting element being provided with a resil-

ient member pressing centrally through a metal pin against the first head face of said member said supporting element being supported in a holder and mounted for movement with respect to said holder in a direction perpendicular to the object to be tested between a retracted rest position and an extended position, said holder forming a part of an arm of a positioning unit, said supporting element being supported such that the piezoelectric member extends from said holder, said supporting element being biassed in the retracted rest position, said arm being adapted to move said supporting element brought to a point that is a short distance from the object to be tested, said arm and holder being provided with drive means for moving the supporting element from the retracted rest position, in a direction toward the extended position, to a position where the piezo-electric member is pressed against the object to be tested with a predetermined force in response to a control unit.

4,494,411

PRESSURE DETECTOR COMPRISING A CYLINDRICAL CAVITY RESONATOR HAVING A FRONT SURFACE MADE AS A DIAPHRAGM

Peter Koschke, Bad Feilnbach, and Pavel Novak, Munich, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Fed. Rep. of Germany

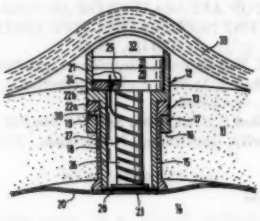
PCT No. PCT/EP82/00183, § 371 Date Apr. 27, 1983, § 102(e) Date Apr. 27, 1983, PCT Pub. No. WO83/00925, PCT Pub. Date Mar. 17, 1983

PCT Filed Aug. 27, 1982, Ser. No. 495,360

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3126093

Int. Cl.³ A61B *5/00*; G01L *9/12*

U.S. Cl. 73—724 **12 Claims**



1. A pressure detector, for measuring the intracranial pressure, including a sensor housing which comprises a cavity resonator circuit of a specific inductance and a capacity changeable in dependence on the pressure and an oscillator connected with said resonator circuit, said resonator cavity circuit comprising a cylindrical cup of electrically conductive material, an elastically yieldable, electrically conductive diaphragm that seals its front surface, and a helical inner conductor ending in a flat electrode and situated coaxially in said cup spaced from said diaphragm and secured to the bottom of said cup, wherein the cavity resonator circuit is a resonator with a helical inner conductor, said helical inner conductor being built upon a ceramic body situated coaxially in the said cup, said helical inner conductor being provided on its front face with the said flat electrode, and further characterized in that the said oscillator for the cavity resonator circuit is situated inside of the sensor housing.

4,494,412

TESTING TOOL FOR STUDS AND THE LIKE

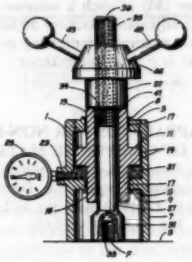
Raymond D. Hardy, 10311 Desdemona Dr., Dallas, Tex. 75228

Filed May 19, 1983, Ser. No. 496,090

Int. Cl.³ G01L *1/02*

U.S. Cl. 73—761 **17 Claims**

1. A tool for testing fasteners such as studs protruding from a plane surface comprising a cylinder having a pair of end walls each centrally apertured and an extension at one end for engagement with the fastener mounting surface, a piston slidable in the cylinder and having rod portions extending through both end walls of the cylinder, an axial aperture through the piston and piston rods, an elongated tension member extending through the aperture and axially movable therein with both its ends protruding from said piston rod portions, the portion of said tension member protruding from said piston rod in the same direction as the cylinder extension having means for gripping a fastener, a collar surrounding said tension member and adapted to abut against the end of the piston rod remote from the cylinder extension and means for forcing said collar



against the adjacent end of the adjacent piston rod, thus applying tension to said tension member and fastener and urging the piston rod and piston axially in the cylinder toward the fastener mounting surface, a hydraulic pressure gauge communicating with the cylinder between the piston and the end wall of the cylinder between the piston and the fastener mounting surface, hydraulic fluid in the same portion of the cylinder whereby tension applied to the fastener by said tension member causes movement of the piston rod and piston toward the fastener mounting surface, thereby causing pressure on the hydraulic fluid readable upon said gauge and indicative of the amount of tension applied to the stud.

4,494,413

HOMOGENEOUS SAMPLER FOR NON-HOMOGENEOUS FLOWING OF FLUID

Franciscus H. J. Bukkems, The Hague; Arnon Plaschkes; Cornelis Buurman, both of Amsterdam, and Anton M. P. Broere, The Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 2, 1982, Ser. No. 414,084

Claims priority, application United Kingdom, Sep. 30, 1981, 8129572

Int. Cl.³ G01N *1/20, 1/18*

U.S. Cl. 73—863.43 **6 Claims**

1. A process for sampling a mass of non-homogeneous fluid comprising:

passing a mass of the non-homogeneous fluid through a pipeline as a fluid stream;

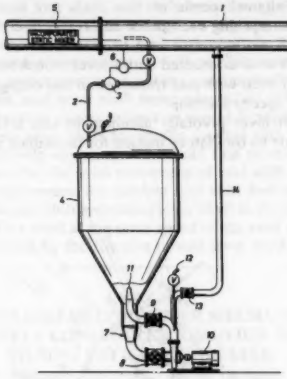
passing the fluid stream through a mixing zone in the pipeline under conditions of turbulent flow;

continuously withdrawing a part of the mixed fluid stream adjacent to the mixing zone at a velocity substantially equal to the velocity of the fluid stream in the pipeline;

introducing the withdrawn fluid stream part into a collecting vessel;

agitating the withdrawn fluid stream part collected in the collecting vessel by continuously removing fluid from the collecting vessel and jetting the removed fluid via a loop and nozzle back into the fluid in the collecting vessel at a

high velocity, the removed fluid exiting the vessel closely adjacent to the nozzle; and



withdrawing a sample from the agitated withdrawn fluid stream part for analysis from the loop.

4,494,414

STARTER WITH A PLANETARY GEAR REDUCTION FACILITIES

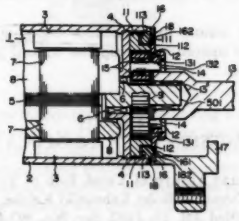
Isao Hamano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,190

Claims priority, application Japan, Oct. 24, 1981, 56-160102[U]

Int. Cl.³ F02N *15/04*; F16H *57/10, 1/32*

U.S. Cl. 74—7 E **6 Claims**



1. A starter with a planetary gear reduction facilities, comprising:

a motor (1) having a first rotary shaft (5) and a yoke (2);

a spur gear (9) formed on said rotary shaft;

a cylindrical ring gear (11) rotatably mounted on an inner peripheral surface of said yoke, an inner peripheral surface of said ring gear having gear teeth thereon;

planetary gear means (12) engaged with said ring gear teeth and said spur gear;

an output second rotary shaft (13), said second shaft having first means (131, 132) for supporting said planetary gear means, said first rotary shaft having second means (501, 13') for rotatably supporting said second shaft;

a first flange (16) mounted to said yoke and engaged with said second shaft to prevent axial movement thereof;

a second flange (4) mounted adjacent one end surface of said ring gear; and

an elastic member (18) mounted between an opposite end surface of said ring gear and an end surface (111) of said first flange, said opposite end surface of said ring gear and an end surface of said elastic member having contacting wave-like convex and concave surfaces (113*a*, 181).

4,494,415

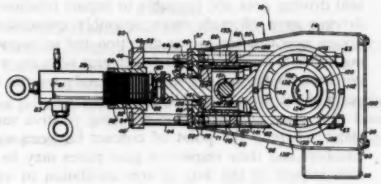
LIQUID NITROGEN PUMP

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Incorporated, Fort Worth, Tex.

Filed Mar. 25, 1982, Ser. No. 361,601

Int. Cl.³ F16H *21/22*; F01B *1/02*; F04B *1/12*

U.S. Cl. 74—44 **17 Claims**



1. A power end assembly for a multi-cylinder reciprocating plunger pump comprising:

a frame including main bearing support means comprising a plurality of spaced apart bearing support blocks and removable bearing cap members secured to each of said support blocks, respectively;

a crankshaft assembly supported in said frame including a plurality of eccentrics, each of said eccentrics supporting a reciprocating connecting rod;

roller bearing assemblies supported in each of said support blocks for journalling said eccentrics, respectively, directly adjacent to and on opposite sides of each of said connecting rods; and

said crankshaft assembly is further characterized by a separable crankshaft section, and each of said eccentrics has a hub portion removably mounted on and drivenly keyed to said crankshaft section whereby said bearing assemblies can be assembled in supportive relationship to each of said eccentrics on opposite sides thereof, respectively.

4,494,416

INFINITE SPEED TRANSMISSION WITH RECIPROCATING YOKES

Lyle B. Evans, 9135 SW. Summerfield Ct., Tigard, Oreg. 97223

Filed Sep. 13, 1982, Ser. No. 416,885

Int. Cl.³ F16H *29/08, 29/20, 27/10*

U.S. Cl. 74—119 **13 Claims**

1. A power transmission including,

a case,

an input shaft journalled in said case,

cam means driven by said shaft,

an output shaft also journalled in said case and in alignment with said input shaft,

reciprocating means driven by said cam means,

an arm member shift plate, arm members swingably mounted on said shift plate and coupled to said reciprocating means whereby oscillating motion is imparted to a pair of said arms,

elongate gear plates having parallel gear racks thereon with each gear plate disposed intermediate a pair of arm members so as to be driven in a reciprocating manner by said pair of arms,

paired drive assemblies driven by each of said gear plates and each of said assemblies including a driven gear enmeshed with and driven by a gear rack on one of said gear plates, a driving gear enmeshed with an output shaft mounted gear, clutch means coupling said driven gear to said driving gear and operable to impart rotation to said driving gear of each drive assembly coincident with driven gear rotation in one direction and to overrun during opposite rotation of said driven gear whereby torque is imparted to the output shaft alternately by the driving gears of the drive assemblies, and

said shift plate adapted for positioning relative said gear plates whereby the point of contact between said arm members and their respective gear plates may be varied with respect to the axis of arm oscillation to vary the magnitude of gear plate travel and hence the speed of the output shaft.

4,494,417

FLEXIBLE ARM, PARTICULARLY A ROBOT ARM

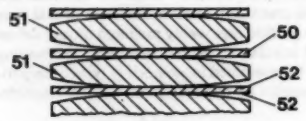
Ove Larson, Gothenburg, and Charles Davidson, Askim, both of Sweden, assignors to Robotgruppen HB, Molndal, Sweden

Continuation-in-part of Ser. No. 351,589, Feb. 23, 1982, Pat. No. 4,393,728, which is a continuation of Ser. No. 129,202, Mar. 11, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,964

Claims priority, application Sweden, Mar. 16, 1979, 7902366

Int. Cl.³ B25J *1/02*; F16C *1/00*; A61F *1/06*

U.S. Cl. 74—469 **6 Claims**



1. A flexible arm, particularly a robot arm, for supporting and/or manipulating tools or the like comprising a plurality of elements arranged in series with adjacent elements contacting each other, at least one contact surface on each element contacting a contact surface of an adjacent element, at least one of said contact surfaces being convexly curved for rolling motion on the other contact surface of the adjacent element, the radius of curvature of said curved surface being relatively larger than half the height of the curved part of said element, the radius of curvature of the other contact surface on the adjacent element varying from a value which is relatively substantially larger compared with the contact surface of the first mentioned element to infinity, and actuating means operably connected to said elements to move them with respect to each other so that said adjacent elements have a rolling motion on said contact surfaces.

4,494,418

MULTI-DIRECTIONAL SINGLE LEVER CONTROL FOR TRANSMISSIONS

Glen R. Bellah, Bolingbrook; Richard H. Mylander, Glen Ellyn; Lloyd B. Idelman, Evanston, and Robert R. Coons, Hinsdale, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed May 18, 1982, Ser. No. 379,409

Int. Cl.³ B60K *20/00, 20/10*

U.S. Cl. 74—475 **9 Claims**

1. A multi-directional single lever control for a transmission with at least two modes of operation, said control comprising:

a speed selector panel with a shift pattern incorporated therein;

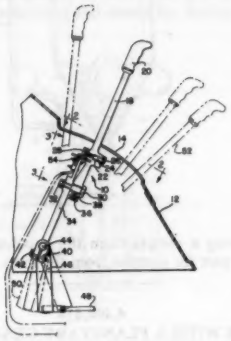
a shift lever freely moveable within and in conformance with said pattern;

said shift pattern comprising first and second sets of sequentially aligned speeds;

said sets opposing each other and respectively operating in one of said modes;

said shift lever connected with a lever mount being mechanically linked with said transmission and engaging said first set of speeds therein;

said shift lever pivotally mounted to said lever mount to provide an oscillatory motion for immediate and alternate



engaging of speeds in said opposed sets and pivoting together with said lever mount for engaging said first set of speeds;

switch means secured to said lever mount and actuated by said shift lever when said shift lever pivots about said lever mount;

said switch means attached to a valve means for controlling an input of pressurized fluid flow thereinto and actuation thereof;

said valve means hydraulically engaging either of said modes of operation in response to said pressurized fluid flow input.

4,494,419

TRANSMISSION MECHANISM IN A MANUAL TRANSMISSION

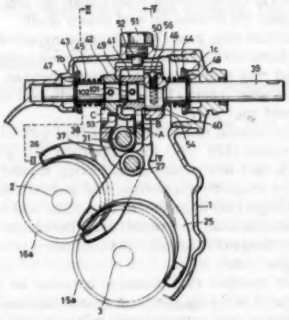
Masaki Inui, and Yasuyoshi Yasui, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 12, 1982, Ser. No. 397,442

Claims priority, application Japan, Aug. 20, 1981, 56-131946

Int. Cl.³ G05G *9/12, 5/10*

U.S. Cl. 74—477 **5 Claims**



1. A transmission mechanism in a manual transmission com-

prising a fork shaft axially movably mounted on a transmission casing; a plurality of shift forks supported by and adapted to move along said fork shaft, said shift forks having first recess means at their upper portions arranged in alignment with each other and perpendicularly to said fork shaft in the neutral position of said transmission; a shift-and-select lever shaft mounted on said transmission casing and perpendicularly to said fork shaft, said lever shaft being adapted to axially move and rotate about its axis; a projection means formed with said shift-and-select lever shaft for axially moving said fork shaft and for selectively engaging one of said first recess means of said shift forks by the axial movement of said shift-and-select lever shaft; and means for moving said shift fork selectively engaged with said shift-and-select lever shaft in the axial direction of said fork shaft at the same speed of the axial movement of said fork shaft by the rotation of said lever shaft.

4,494,420

ROTARY-TO-LINEAR CONVERTER MECHANISM FOR A REMOTELY CONTROLLED REARVIEW MIRROR TILTING DEVICE OR THE LIKE

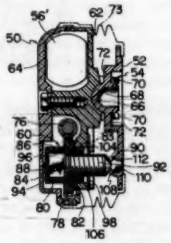
Toranosuke Sakuma, Shizuoka, Japan, assignor to Koito Seisakusho Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,477

Claims priority, application Japan, May 8, 1981, 56-69092; May 9, 1981, 56-69928

Int. Cl.³ G05G *11/00*; F16M *11/12*; A47G *1/24*; G02B *5/08*

U.S. Cl. 74—479 **12 Claims**



1. In a rearview mirror tilting device having a mirror holder (52) and a housing (50), said housing having housing open front and rear parts (62, 64), said housing being adapted and designed for accommodating motors and converter mechanisms, with a ball-and-socket joint (54) serving as the pivotal connection between the housing and the mirror holder, said ball-and-socket joint (54) including a ball (66) affixed approximately centrally on the mirror holder (52) and projecting rearward therefrom, a socket (68) to mate with the ball of said ball-and-socket joint, disposed in a corresponding position on the housing front part (62) so as to provide pivotal motion to the mirror holder (52) relative to the housing (50), in combination:

(a) first and second bidirectional motors (56, 56') within the housing (50), with output shafts, worms (76, 76') connected to said output shafts, meshing with worm wheels (78, 78'), and first and second converter mechanisms (60, 60') so arranged and disposed as to have the bidirectional rotation of the worms transformed into rectilinear reciprocation by the converter mechanisms, hollow rotor means (80) with front and rear parts, said front part being open, said hollow rotor means being formed integral with said worm wheels (78, 78'), said worm wheels being approximately midway between the opposite axial ends of said hollow rotors means (80), a wall rear part disposed at the hollow rotor means rear part perpendicular to its axis of rotation; and,

(b) a boss (88) disposed between the hollow rotor means rear part and the housing rear part (64) said boss extending between said wall rear part and said housing rear part (64) being affixed to one of said rear parts and having a pointed tip in contact with the other of said rear parts, so that the closed end of the hollow rotor means (80) make rotatable point contact and is restrained from axial displacement in the rearward direction, said wall rear part (84) serving to waterproof the tilting device and makes frictionless contact between the hollow rotor means (80) and the pointed tip of the boss (88).

4,494,421

WINDSHIELD WIPER DRIVING DEVICE

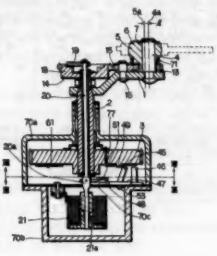
Hirosi Matuoka, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 22, 1982, Ser. No. 360,772

Claims priority, application Japan, Mar. 31, 1981, 56-49161

Int. Cl.³ B60S *1/08*

U.S. Cl. 74—600 **3 Claims**



1. A windshield wiper driving device, comprising:

a crank arm connected to and rotated by a drive shaft which is rotatably driven by a motor;

a pin anchored at said crank arm;

an eccentric bush fitted on said pin and rotatable around said pin;

a stopper plate for rotation together with said eccentric bush;

a ring mounted rotatably on the outer periphery of said eccentric bush and fixed to a line rod;

stopper portions formed integrally with said ring such that a projection of said stopper plate abuts against either of said stopper portions;

an external gear fixed to a side of said eccentric bush which is opposite the side of said stopper plate;

a center gear rotatably fixed on a second pin, which is anchored at said crank arm, planetary gear meshing with said center gear and said external gear;

two stopper portions formed diametrically opposite of each other in said center gear;

a lever selectively engaging with either of said two stopper portions for stopping the rotations of said center gear; and,

drive means for driving said lever, whereby a wiping angle of a wiper blade connected to said link rod, is changed depending on whether rotations of said center gear are blocked or not blocked by said lever.

4,494,422

FLUIDIC TRANSMISSION CONTROLLER

Maurice F. Funke, 6891 Garland La., Columbia, Md. 21045, and Joseph W. Morris, Howard County, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Joseph W. Morris

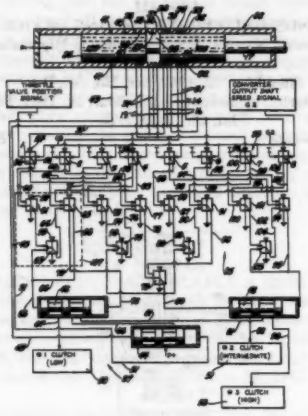
Filed Sep. 16, 1982, Ser. No. 418,858

Int. Cl.³ B60K *41/10*, *41/22*; F15C *1/12*

U.S. Cl. 74—867 **5 Claims**

1. A fluidic transmission controller comprising a range selector valve (22) having a plurality of selectively energized output signal lines; a fluidic comparator module (23) that includes a plurality of similar comparators; each comparator comprising

a main supply port (54) connected to selected ones of the aforementioned signal lines, a primary collector port (56), an alternate collector port (58), one deflector beam port receiving a pressure signal T related to engine throttle position and a second deflector beam port receiving a pressure signal G2 related to transmission output speed; a fluidic logic section (25) that includes a series of similar modules (107), each logic module comprising a plurality of beam deflection type amplifiers; selected amplifiers in the individual modules (107) having beam deflector ports receiving individual output signals generated by the comparators in the fluidic comparator module (23); and a clutch-control spool valve section (27) that includes a number of similarly constructed spool valves having control faces communicating with control signals generated by selected ones of the modules in said logic section (25).



4,494,423

AUTOMATIC TRANSMISSION CONTROL FOR AN AUTOMOTIVE VEHICLE DRIVELINE HAVING FAIL-SAFE LOGIC

James P. McCarthy, Inkster, and Richard E. Byler, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01062, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982
PCT Filed Aug. 4, 1982, Ser. No. 421,770
Int. Cl.³ B60K *41/04*
U.S. Cl. 74—869 8 Claims

1. An automatic power transmission mechanism for delivering torque from a power input member to a power output member comprising:

multiple speed ratio torque transmitting gearing establishing torque delivery paths between the input member and the output member;

multiple fluid pressure operated clutch and servo means for connecting and holding elements of said gearing;

a fluid pressure source;

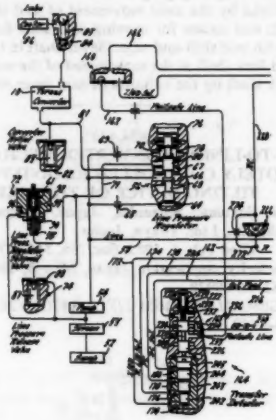
a valve for regulating the fluid pressure from said pressure source to line pressure;

a manual valve supplied with fluid from the regulating valve for communicating fluid at line pressure to a first outlet when the manual valve is disposed in a forward drive position or to a second outlet when the manual valve is disposed other than in the forward drive position;

transfer valve means normally in a first state at which communication is open between said manual valve first outlet and a feedline, movable to a second state at which communication is open between said manual valve first outlet and a fail-safe line that carries fluid to those clutch and servo means whose pressurization produces a predetermined speed ratio;

actuating means supplied with fluid from the feedline for selectively opening and closing communication between said feedline and selected clutch and servo means whereby said clutch and servo means are engaged and disengaged and the transmission ratios thereby produced;

detector valve means continuously communicating with the output of the actuating means disposed in a first state if the output of the actuating means is the output required for normal operation in a transmission drive ratio and disposed in a second state if the output of the actuating means is other than the output required for normal operation in a transmission drive ratio, being adapted to move the transfer valve means to its second state upon movement of the detector valve means to its second state, whereby the feedline is pressurized if the output of the actuating means corresponds to normal operation in a drive ratio and whereby the failsafe line is pressurized if the output of the actuating means is other than the output required for normal operation.

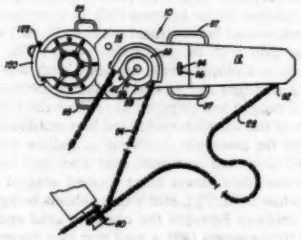


4,494,424

CHAIN-POWERED PIPE TONG DEVICE

Darrell R. Bates, P.O. Box 231, Thomas, Okla. 73669

Filed Jun. 24, 1983, Ser. No. 507,341
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.18 28 Claims



1. A chain-pow[illegible]ed pipe tong device comprising:

an elongated main housing including a lever arm portion adjacent one end of the housing and a pipe engaging mechanism portion defining a pipe opening extending through the main housing, and defining a radial opening at

one side of the pipe engaging mechanism portion communicating with the pipe opening;

an annular gear housing rotatably mounted in the main housing and having a central opening therethrough aligned with said pipe opening in the main housing, said gear housing further defining a pipe admitting radial opening at one side thereof communicating with said gear housing central opening, and said gear housing further defining a plurality of radially inwardly opening pipe dog ports communicating with the central opening in said gear housing;

an annular main gear rotatably mounted within said gear housing and having a central opening therethrough aligned with the central opening in said gear housing, and further having a pipe admitting radial opening at one side thereof communicating with the central opening in said main gear, said main gear having gear teeth around the outer periphery thereof, and said main gear defining a plurality of circumferentially spaced cam slots;

pipe gripping dog subassemblies mounted in said gear housing and each including a cam rod, and dog means connected to said cam rod, each of said cam rods cooperating with one of said cam slots, and each of said dog means being positioned for extension through one of said pipe dog ports at a time during relative movement between the respective cam rod connected thereto and one of said cam slots;

a chain sprocket rotatably mounted on said main housing and accessible on the outer side of said main housing;

a two directional intermediate gear train positioned between, and drivingly interconnecting, said chain sprocket and said main gear for selectively driving said main gear in a clockwise or counterclockwise direction when said chain sprocket is driven in one direction;

a shifting and braking subassembly mounted in said main housing, and including means for alternately shifting said intermediate gear train from a clockwise driving status to a counterclockwise driving status, and for alternately placing said intermediate gear train in a neutral status in which rotation of said chain sprocket does not drive said main gear, said shifting and braking subassembly further including means for locking said main gear against rotation relative to said main housing; and

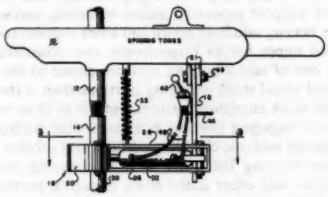
a drive chain drivingly connected to said chain sprocket.

4,494,425

BACKUP TONG

Hollis G. Shewmake, Sr., 412 Pine, Levelland, Tex. 79336

Filed Mar. 21, 1983, Ser. No. 477,436
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.34 **7 Claims**



1. In a tong assembly for threading and unthreading a joint of cylindrical goods into and from a string of cylindrical goods including:

a. spinning tongs for rotating the joint of cylindrical goods in threadable alignment with the string of cylindrical goods, and

b. threadable engagement of the joint and string of cylindrical goods during rotation of the joint of cylindrical goods tending to induce rotational movement of the string of cylindrical goods,

the improved backup tongs in combination with the above comprising:

c. a backup tong body connected to the spinning tongs,

d. a moveable jaw journaled to the body for movement about a cam axis,

e. a body jaw rigidly attached to the body opposite the moveable jaw,

f. a backer on the body adjacent the moveable jaw and the body jaw,

g. a cam face on the moveable jaw adapted to grip a wall of cylindrical goods aligned between the jaws,

h. the cam face being curved convex to the wall,

i. the cam axis being parallel to the wall,

j. a fixed face on the body jaw adapted to grip the wall,

k. the cam face being eccentric such that as the movable jaw is moved about the cam axis the distance between the cam face and the fixed face changes,

l. lever means connected to the body and the movable jaw for moving the movable jaw about the cam axis,

m. a bracket connected to the spinning tongs,

n. a slot in the bracket parallel to the wall of the cylindrical goods,

o. a post having an axis attached to the body with

p. the backer aligned with the post axis, and

q. the post being slidably positioned within the slot,

r. the post having a locking section and a reversing section therealong,

s. the reversing section having a circular cross-section with a diameter less than the width of the slot,

t. the locking section having a square cross-section slightly less than the width of the slot, and

u. a keeper at the end of the post larger than the width of the slot,

v. the body being oriented to the cylindrical goods such that the induced rotation of the string of cylindrical goods will move an area of the wall adjacent the moveable jaw toward the backer, and

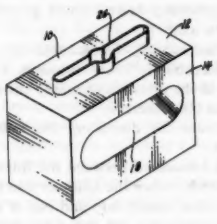
w. the faces on each jaw being toothed plates attached thereto.

4,494,426

PUNCH WITH REMOVABLE BLADE

John C. Hartzell, 19249 Allen Rd., Trenton, Mich. 48183

Filed May 20, 1983, Ser. No. 496,614
Int. Cl.³ B26F *1/14*
U.S. Cl. 83—164 **2 Claims**



1. A punch for cutting an elongated slug from a sheet of material, comprising:

a body having a first opening, and a second opening connected to the first opening for removal of the slug;

the body having a lower seat and an upper seat disposed between said openings, the upper seat being disposed adjacent the first opening;

a hollow blade received in the body, the blade having a pair of opposed sides including a first side, and a second side shorter than the first side, the blade being mounted on the lower seat such that the upper seat supports the short side of the blade whereby the blade is disposed to define a generally continuous cutting edge about said first opening

for punching a slug in the sheet material, and the upper seat engages the slug as it passes through the blade toward the second opening; and

means in the body for locking the blade in a cutting position.

4,494,427

ROTATING SHEAR FOR HIGH-SPEED WIRE-ROLLING LINE

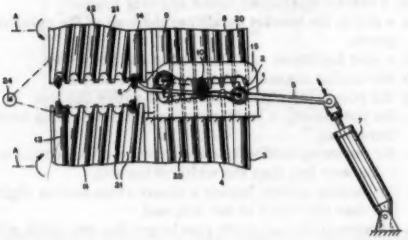
Gerhard Pechau; Ewald Wyzgol, and Rudi Jacob, all of Magdeburg, German Democratic Rep., assignors to Veb Schwermaschinenbau-Kombinat "Ernst Thälmann" Magdeburg, Magdeburg, German Democratic Rep.

Filed Dec. 27, 1982, Ser. No. 453,120

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1981, 236519

Int. Cl.³ B23D 25/12

U.S. Cl. 83—306 10 Claims



1. A rotating shear for cutting a rapidly moving wire, the shear comprising:

a pair of cutter heads rotatable about parallel axes and having respective blades;

means for synchronously rotating the heads about the respective axes with close juxtaposition of the blades on each revolution, whereby when the wire is between the heads level with the blades it is severed thereby;

a guide tube surrounding the wire upstream of the heads and having a downstream end movable generally parallel to the axes and positioned adjacent and between the cutter heads, the wire exiting from the guide tube in a direction generally perpendicular to the plane of the head axes;

a guide head fixed to one of the cutter heads and formed with a generally helical guide groove centered on the respective axis;

an axially and radially displaceable but angularly generally nondisplaceable follower movable between a position engaged in the groove and axially entrainable thereby and a position clear thereof;

actuator means for displacing the follower between the positions;

a rigid link connected between the follower and the guide tube, whereby when the follower is in the groove the tube can be pulled axially into and out of alignment with the blades for cropping of the wire and when out of the groove the tube can be moved independently of the head, the drive means counterrotating the cutting heads, said cutting heads being formed with helical grooves of the same pitch and hand and each of a radial depth greater than the wire diameter, the guide groove being of the same pitch but opposite hand as the cutter-head grooves; and

another guide head fixed on the other cutter head and formed with a generally helical guide groove centered on the respective axis and of the same pitch and hand as the other guide groove, the two guide heads being radially spaced sufficiently that the follower can be engaged in one of the guide grooves without engaging in the other.

4,494,428

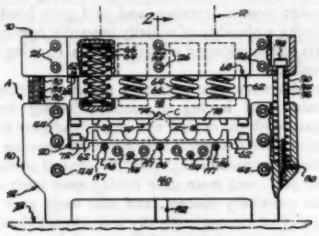
CUTTING TOOL INSERT ASSEMBLY FOR SHEARS

A. Paul Malof, 35 Burgundy Ter., North Amherst, N.Y. 14120

Filed Feb. 26, 1982, Ser. No. 352,641

Int. Cl.³ B26D 3/16, 7/02

U.S. Cl. 83—389 2 Claims



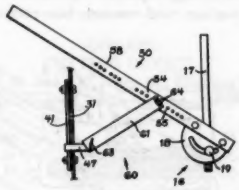
1. A removable cutting tool insert assembly for shears fed with stock, such as bar stock; said assembly including upper and lower housings; and means mounting said housings on each other for relative closing movement toward and opening movement away from each other in one direction transverse to the stock feed direction; said mounting means including resilient means normally biasing said housings into spaced apart relationship; wherein the improvement comprises: upper and lower knives on said upper and lower housings respectively, with one of said knives being offset downstream from the other of said knives in the stock feed direction and with both of said knives being elongated in another direction transverse to both said one direction and the stock feed direction; said means mounting said knives including adjustable means providing for relative movement of said knives not only toward and away from each other in the stock feed direction for adjusting the clearance between said knives, but also along each other in said other direction, for centering said knives; said upper and lower knives having lower and upper edge surfaces respectively opposing and proximately spaced from each other in said one direction, with said lower and upper edge surfaces being cut away to provide recessed cutting edge surfaces forming respectively top and bottom initial stock engaging portions opposing and remotely spaced from each other in said one direction; a hold down and a work support elongated in said other direction and having lower and upper clamping surfaces respectively; and means movably mounting said hold down and work support on said upper and lower housings respectively adjacent said upper and lower knives respectively, with said lower and upper clamping surfaces facing said bottom and top initial stock engaging portions respectively; said hold down and work support mounting means including resilient means normally biasing said hold down and work support toward said lower and upper knives respectively, one positioning means locating one of said clamping surfaces closer to the opposite one of said initial stock engaging portions than is the other of said initial stock engaging portions, but not as close to said one intial stock engaging portion as is said edge surface of said knife adjacent said one clamping surface, and another positioning means locating the other of said clamping surfaces no further from said other initial stock engaging portion than is said one initial stock engaging portion, but not as close to said other initial stock engaging portion as is said edge surface of said knife adjacent said other clamping surface; whereby upon said closing movement, said one clamping surface resiliently clamps one of the upstream and downstream stock portions against the opposite one of said knives both prior to and during shearing, in order to prevent the one stock portion from kicking, while said other clamping surface resiliently clamps the other of the upstream and downstream stock portions against the opposite other of said knives during shearing, in order to prevent the other stock portion from bending.

4,494,429

CROSSCUT SAW CARRIAGE

Warren C. Frame, Box W, Ronan, Mont. 59864

Filed Dec. 17, 1982, Ser. No. 450,654
Int. Cl.³ B27B 27/06
U.S. Cl. 83—435.1 1 Claim



1. A crosscut saw carriage for use with a crosscut saw having a saw blade mounted in a saw table, and a miter guide slidable upon the saw table;

the miter guide having a pivotable miter guide head which can be pivoted with respect to the direction of travel of the miter guide upon the saw table, comprising:

a rail mounted at the side of the saw table and parallel with the direction of travel of the miter guide;

a rolling carriage having a plurality of rollers for rolling engagement upon the rail to allow the rolling carrier to translate along said rail;

a transverse beam extending across at least a portion of the saw table; the transverse beam being adapted for rigid connection to the pivotable miter guide head adjacent one end thereof;

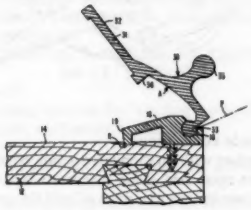
an adjustable link connected to and extending between the rolling carrier and the transverse beam; the adjustable link being connected to the transverse beam and rolling carrier by fasteners which allow the angular orientation of the adjustable link and transverse beam to be adjusted for different angular orientations with respect to the saw table.

4,494,430

PAPER GUIDE FOR PAPER CUTTER

John Bautista, Chicago Ridge, and Lawrence H. Miller, Downers Grove Township, Du Page County, both of Ill., assignors to Ideal School Supply Corporation, Oak Lawn, Ill.

Filed Mar. 14, 1983, Ser. No. 475,000
Int. Cl.³ B26D 13/4
U.S. Cl. 83—468 5 Claims



2. In a paper cutter apparatus including a cutting board having a surface to accommodate the paper stock to be cut, a graduated ruler to permit selection of the width of the cut paper stock, and a cutting mechanism, the improvement of a paper guide means associated with the ruler to provide a surface against which the paper stock is positioned prior to cutting, the improvement comprising:

a ruler affixed to said cutting board and having a cylindrically shaped groove extending at least the useful length thereof, and

a paper guide means having a paper guide arm and a cylindrical member, said cylindrical member being slidably positioned within the cylindrically shaped groove of said ruler to enable said paper guide means to horizontally traverse the cutting board surface and to vertically rotate about said cylindrical member from a position wherein said paper guide arm contacts said cutting board surface to a position removed from said surface,

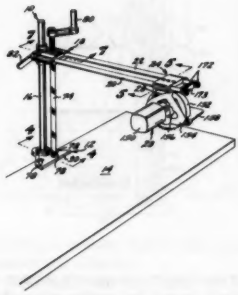
said paper guide means engaging said ruler in an interference fit when said paper guide arm contacts said cutting board surface to essentially secure said paper guide means at a fixed location on said ruler.

4,494,431

PORTABLE RADIAL ARM SAW

John O. Niswonger, 1947 Silver Spur Cir., Ojai, Calif. 93023

Filed May 7, 1982, Ser. No. 375,874
Int. Cl.³ B27B 5/00
U.S. Cl. 83—471.3 8 Claims



1. A radial arm saw comprising:

a base for attachment to a work support surface;

a vertical post attached to said base;

a rail support coupled to said post for vertical adjustable movement along said post;

horizontally extending rail means supported by said rail support and extending inwardly of said vertical post;

a carriage coupled to said rail means for horizontal movement along said rail means; and

saw support means for suspending beneath said carriage a circular saw of the type having a motor housing, a saw guard, a handle overlying said motor housing and spaced inwardly of said saw guard, and a base plate through which the blade of said circular saw extends, said saw support means being coupled to said carriage for movement of said circular saw about vertical and horizontal axes, said saw support means including a forward portion extending downwardly for attachment to forward structure of said base plate, and further including a rearward portion extending rearwardly and downwardly for overlying engagement upon that portion of said saw located between said handle and said saw guard, said rearward portion being adapted to fit in the space between said handle and said saw guard whereby said handle is accessible for use in manipulating said circular saw, said forward portion of said saw support means comprising a forward bracket adapted to extend forwardly of said motor housing and downwardly for fixed connection to said forward structure of said base plate, said rearward portion of said saw support means comprising a rearward bracket adapted to extend rearwardly of said motor housing and downwardly for fixed connection to said rearward structure of said base plate, said forward bracket being generally vertically slotted at the point of said fixed connection to accommodate saws of different heights, said forward

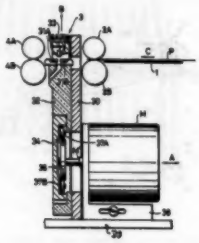
and rearward brackets being interconnected and at least one of said forward and rearward brackets being generally horizontally slotted where they are interconnected thereby to accommodate different sizes of base plates, said saw support means further including a fitting having a lower portion for engaging the underside of said rearward structure of said base plate, and an upper portion adapted to overlie said rearward structure, said upper portion having a threaded element operative to bias said upper portion away from said rearward bracket for urging said rearward bracket and said reward structure together.

4,494,432

INTERCHANGEABLE CUTTER MECHANISM

Mikio Kogane, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1983, Ser. No. 467,550
Claims priority, application Japan, Feb. 17, 1982, 57-24230
Int. Cl.³ B26D 5/16, 7/26
U.S. Cl. 83—559 **3 Claims**



1. A cutter mechanism comprising support means, a stationary cutting block having first cutting edges thereon detachably connected to said support means, a moveable cutting block having second cutting edge means thereon, guide means operably inter-connecting said stationary cutting block and said moveable cutting block together as a unit and for guiding said moveable cutting block relative to said stationary cutting block to bring said first and second cutting means into and out of operative engagement with each other and drive means for moving said moveable cutting block relative to said stationary cutting block, said drive means being moveably supported on said support means for movement into and out of operative engagement with said moveable cutting block for permitting separation of said stationary and moveable cutting blocks as a unit from said support means.

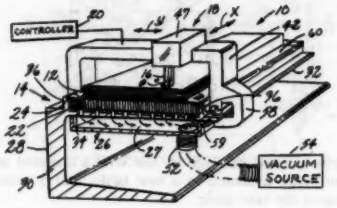
4,494,433

APPARATUS FOR WORKING ON SHEET MATERIAL AND HAVING MOVABLE VACUUM CHAMBER

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Jan. 25, 1982, Ser. No. 342,507
Int. Cl.³ B26D 5/00, 7/00, 1/00
U.S. Cl. 83—374 **9 Claims**

5. In an apparatus for working on sheet material and having a vacuum table assembly including a fluid permeable bottom wall and defining a fixed fluid permeable upper support surface upon which sheet material may be spread, a carriage assembly including a first carriage supported for movement longitudinally of the support surface and a second carriage supported on the first carriage for movement with the first carriage and transversely of said first carriage and said support surface, an instrument supported on the second carriage, a programmable controller, means for moving said carriage assembly in response to signals received from the programmable controller to move the instrument in working relation to sheet material spread on the support surface, and means for producing vacuum at a portion of the support surface in the working region of the instrument to hold sheet material spread over the portion of the support surface in firmly fixed engagement with the portion of the support surface, the improvement comprising said vacuum producing means including an upwardly open vacuum box disposed in generally sealing engagement with the lower surface of said bottom wall and having a transverse dimension substantially equal to the transverse dimension fo said support surface, said vacuum box cooperating with an



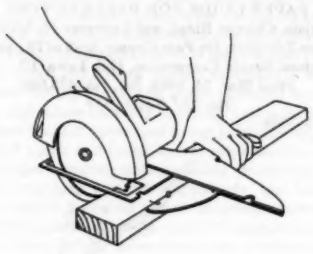
associated portion of said bottom wall to define a movable vacuum chamber generally below the transverse path of said instrument and in communicating with said fluid permeable support surface, and said apparatus including a rigid connecting member connected in fixed position to said first carriage and to said vacuum box, said connecting member connecting said vacuum box to said first carriage outboard of a longitudinally extending free edge of said table assembly to move longitudinally of said table assembly with said first carriage.

4,494,434

QUICK POSITIONING CUT-OFF GUIDE FOR HAND POWER SAWS

Robert W. Young, 2151 Pimmit Dr., Falls Church, Va. 22043

Filed Jul. 2, 1982, Ser. No. 394,504
Int. Cl.³ B27B 9/04
U.S. Cl. 83—745 **12 Claims**



1. A saw guide comprising:

a guide member with an elongated guide edge;

flange means upon said guide member adapted to abut the edge of a workpiece, the edge of said flange means being at right angles to said elongated guide edge;

an index member having a straight edge portion, said index member being pivotally mounted to said guide member so as to be moveable to a measurement position from a storage position, wherein said straight edge portion abuts the edge of a workpiece in the measurement position;

means for driving said index member from said storage position to said measurement position;

means for returning said index member from said measurement position to said storage position;

a measurement mark or marks on said straight edge of said index member;

said mark or marks indicating the position of the blade of the saw when the saw is guided along said elongated guide edge;

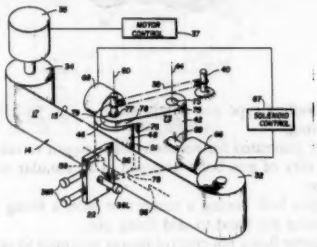
wherein said guide member is placeable upon a workpiece in such a manner that the table plate of a portable saw may bear against and be guided by said elongated guide edge, thereby facilitating cutting of the workpiece along a path parallel to said elongated guide edge.

4,494,435

CUTTING DEVICE

Ned Lindsay, P.O. Box 529, Main St., Chester, Vt. 05143

Filed Sep. 23, 1983, Ser. No. 535,297
Int. Cl.³ B26D *3/08*
U.S. Cl. 83—880 **9 Claims**



9. A method for cutting at least one layer of a multilayered moving composite of selected thickness comprising the steps of: fixing a cutting blade in a stationery position; movably supporting a roller in parallel spaced relationship with the fixed cutting edge; moving the roller along an arcuate path in proximate space relationship with the cutting edge; moveably supporting the composite in parallel spaced relationship between the roller and the cutting edge; engaging the composite from one side with the roller and thereby urging an opposite side of said composite into engagement with the cutting edge, for cutting the same as the roller moves in proximate spaced relation with said cutting edge; and establishing a spacing of the roller and the cutting edge, such that, at the position of proximate spaced relation, the spacing of the roller and cutting edge is less than the thickness of the composite, so that, after the cut is made, the composite remains intact.

4,494,436

APPARATUS FOR MANUFACTURING RESIN IMPREGNATED FIBER BRAIDED PRODUCTS

August H. Kruesi, Wallingford, Vt., assignor to Elfin Corporation, Wallingford, Vt.

Filed Sep. 2, 1983, Ser. No. 528,929
Int. Cl.³ D04C *3/40*
U.S. Cl. 87—23 **9 Claims**

1. In a braiding machine for braiding a plurality of filaments about a mandrel, said machine including:

a base,

a mandrel supported on said base for movement along its axis,

a braid wrapping carrier mounted for rotation about its axis and concentrically about the mandrel at a fixed longitudinal rotational plane position relative to the mandrel movement,

means for mounting bobbins of filaments to be braided to said carrier at spaced circumferential positions thereon for bobbin rotation about their axes,

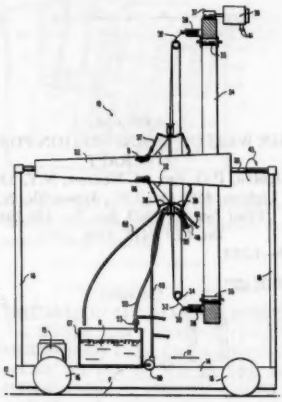
means for fixing free ends of the filaments to said mandrel at a point axially spaced from said carrier rotation plane,

means for rotating said carrier and axially shifting said mandrel to cause said filaments to wrap about said mandrel and to form a braid, the improvement comprising:

a means defining at least one annular applicator ring fixedly mounted concentrically about said mandrel axially and radially between said carrier rotation plane and the filament contact area with said mandrel and being sized and in a position such that the filaments partially wrap and wipe across a filament wrapping surface of said applicator ring,

means internally of said applicator ring and including the filament wrapping surface portion of said applicator ring for defining a closed plenum chamber,

finite pores within said filament wrapping surface of said ring,



means for supplying a coating liquid under pressure to said plenum chamber and wherein,

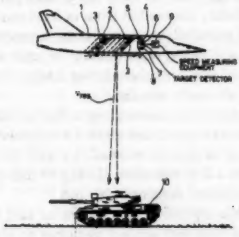
said pores are sized such that, depending on the viscosity of the coating liquid and the fluid pressure within said chamber, the coating liquid bulges out of the pore opening but is prevented from flowing therefrom until a filament passes over the pore, whereby the filament breaks the surface tension and draws in the liquid by capillary action to impregnate the filament with said coating liquid.

4,494,437

ARRANGEMENT IN LOW-FLYING WEAPONS CARRIERS FOR COMBATING GROUND TARGETS

Ignaz von Maydell, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung

Filed Jan. 23, 1980, Ser. No. 116,025
Int. Cl.³ F41H *13/00*
U.S. Cl. 89—1.51 **11 Claims**



1. Arrangement in a low-flying weapons carrier comprising a manned or remote control aircraft for combatting ground targets, a weapon located in said weapon carrier, said weapon arranged to hold a plurality of ammunition members for attack-

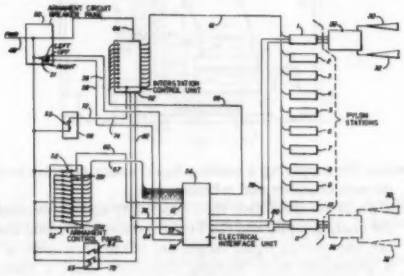
ing ground targets and said weapon having steeply downwardly directed ballistics, a release 5 in said weapon carrier for said weapon 2, a target detector 4 in said weapon carrier separate from said weapon and assigned to said release, said target detector is of relatively short reach which is directed steeply downwardly and parallel to the direction of the resulting velocity vector V_{RS} of the ammunition members 3 to be discharged from said weapon.

4,494,438

AIR-TO-AIR WEAPON MODIFICATION FOR MILITARY AIRCRAFT

Gary R. Lighton, P.O. Box 81, Nedrow, N.Y. 13120, and Michael S. Lighton, 4600 Odell Pl., Jamesville, N.Y. 13078

Filed Jan. 20, 1983, Ser. No. 459,295
Int. Cl.³ F41F *3/06, 5/02*
U.S. Cl. 89—1.813 **7 Claims**



1. In a military aircraft having at least ony pylon permanently connected to each wing, said pylons each having a pair of spaced hooks for suspension mounting of conventional air-to-ground weapons, said aircraft further having an electrical system including a power supply, a weapons control network adapted to launch or reject said air-to-ground weapons in response to signals from said power supply, and a pair of selectively operable switches for connecting said signals to said control network to release and reject, respectively, a weapon connected to said network, the combination comprising:

(a) a mounting member having a pair of spaced lugs adapted for engagement by said spaced hooks, thereby suspending said mounting member from one of said pylons, one of said members being suspended from at least one of said pylons;

(b) a pair of missile launchers fixedly connected to inboard and outboard sides, respectively, of said mounting member, each of said launchers being adapted to carry a conventional air-to-air missile;

(c) means electrically connecting a first of said launchers to said weapons control network for selective launching or rejecting of a missile carried by said first launcher in response to a first selective closing of one of said first and second switches, respectively; and

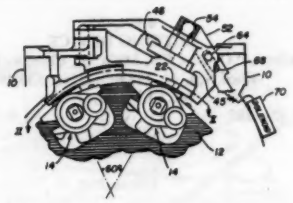
(d) relay means operable in response to said first closing of one of said first and second switches to electrically connect the second of said launchers to said weapons control system for selective launching and rejecting of a missile carried by said second launcher in response to a second selective closing of one of said first and second switches, respectively.

4,494,439

FIRING MECHANISM FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN

Quentan T. Sawyer, Milton, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Apr. 25, 1983, Ser. No. 488,226
Int. Cl.³ F41D *7/04*
U.S. Cl. 89—12 **7 Claims**



1. A Gatling type gun comprising:

a housing;

a rotor journaled for rotation with respect to said housing;

a plurality of gun bolts disposed in an annular row on said rotor;

each gun bolt having a respective face, a firing pin, and a cocking pin fixed to said firing pin;

switchable firing pin control means mounted to said housing for sequentially engaging each of said cocking pins during rotation of said rotor of the respective gun bolts past the firing angular sector of said gun, and having

a first disposition for positively projecting the forward tip of each firing pin, whose respective cocking pin has been engaged, forward of said face of its respective gun bolt, by coupling the kinetic energy of the rotor to the firing pin over a period of time, and

a second disposition for positively precluding the forward tip of each firing pin from projecting forward of said face of its respective gun bolt; and

switching means coupled to said switchable firing pin control means for remotely switching said control means to and between said first and second dispostions.

4,494,440

ARMING SETS FOR WEAPONS SYSTEM

Richard Koine, Ratingen, Fed. Rep. of Germany, assignor to Rheinametall GmbH, Düsseldorf, Fed. Rep. of Germany

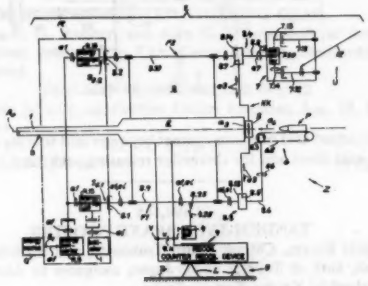
Filed Apr. 14, 1978, Ser. No. 898,462
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716892
Int. Cl.³ F41D *10/14*
U.S. Cl. 89—33.04 **21 Claims**

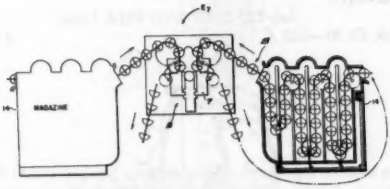
1. A weapons system comprising:

a plurality of central units each comprising a single-barrel automatic weapon, a respective munitions loader for loading individual rounds of munitions into a chamber of the respective weapon, a respective breech block closable for firing of the round in the chamber, said rounds each comprising a PRUNIT consisting of a projectile and a solid body of propellant affixed to said projectile and ignitable to propel the projectile through the barrel, and a respective arming set for at least some of said weapons, each arming set comprising means defining first and second energy-flow paths including respective shafts adapted to transmit torque from input ends to output ends of the path, at least one of the shafts being connected operatively to said breech block for shifting same between open and closed positions, at least one of the shafts of each energy-flow path being operatively connected to said loader of at least one weapon associated with the arming set, each arming set including an energy converter for transforming

energy from an energy source into a torque of at least one of the shafts thereof, the respective weapons being combined with respective arming sets and energy converters in accordance with the respective operating characteristics of the weapon in terms of the nature of the energy applied to operate same;

a recoil/counterrecoil mechanism associated with at least some of said weapons; and





a respective munitions feeder for feeding PRUNITS to each of said loaders, at least some of said munitions feeders being provided with two munitions magazines each receiving PRUNITS of different type and a selector for advancing a PRUNIT of a selected type from one of the magazines to the respective loader.

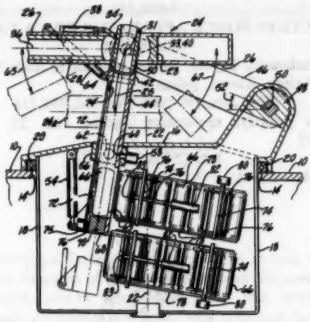
4,494,441

AMMUNITION FEED TRUNNION SUPPORT

Roland A. Magnuson, King, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1983, Ser. No. 521,470
Int. Cl.³ F41H 7/06
U.S. Cl. 89—38 **7 Claims**

1. In a military land vehicle comprising a hull; a turret mounted on the hull for rotational motion in the azimuth direction, said turret including a roof located approximately in the plane of the hull upper surface, a cannon located above the turret roof, and a mechanism supporting said cannon for bodily motion between a first lowered prone position adjacent said turret roof, and a second elevated prone position remote from said turret roof; said cannon comprising a receiver, a breech slidable with said receiver, and firing chamber means within said breech: the improvement wherein said support mechanism comprises a hollow elongated upright tube extending within the turret through an opening in said turret roof, a yoke affixed to the upper end of said hollow tube, trunnion means (40) between said yoke and cannon receiver enabling said cannon to swing in an elevational plane around an axis transverse to the longitudinal axis of said hollow tube, bracket means upstanding from said turret roof remote from said hollow tube, link means (46) pivotally connected to said bracket means and to said trunnion means for arcuate swinging motion in a vertical arc during motion of said cannon between its lowered position and its elevated position, said link means being oriented to absorb recoil forces during the cannon firing opera-



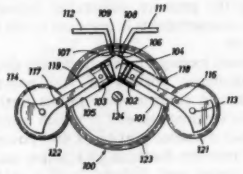
tion; and means within said hollow tube for conveying individual rounds of ammunition from the turret interior through said tube to said cannon firing chamber.

4,494,442

VALVE ACCENTUATION MECHANISM FOR OPPOSED INVERTED V ENGINE

Clark N. Fishel, 6704 Shady Cedar Cir., Austin, Tex. 78734

Continuation of Ser. No. 152,768, May 23, 1980, abandoned.
This application Mar. 30, 1982, Ser. No. 363,569
Int. Cl.³ F01B 7/04
U.S. Cl. 91—181 **15 Claims**



1. In a machine, such as an engine or an air compressor, the improvement comprising:

(a) a body supporting a pair of counter-opposed cylinders whose axes are oriented in an intersecting angle between 80 and 179 degrees and each pair of said cylinders having a common compression zone;

(b) means mounting a piston for reciprocation within each cylinder from its open end;

(c) rotary means connected with said pistons reciprocating in said cylinders;

(d) a flywheel journaled to said body for rotation about an axis and driven by said rotary means;

(e) a plurality of cylindrical valve chambers mounted on said body parallel to said flywheel axis of rotation;

(f) said valve chambers being connected to said compression zone of each cylinder pair by spaced apart ports, with one valve chamber being connected to intake means and the other valve chamber being connected to exhaust means;

(g) cylindrical piston valves mounted for axial movement within said valve chambers and having valve openings selectively aligned to interconnect said ports of said valve chambers with said intake and exhaust means; and

(h) said flywheel carrying cam surfaces adapted to move axially said piston valves to preset positions within said valve chamber at selected angular positions of said flywheel whereby said piston valves are moved between preset positions and control flow through said ports in said

valve chambers in timed sequence to reciprocation of said pistons in said cylinders.

4,494,443

REACTION FORCE APPARATUS FOR A VACUUM BOOSTER

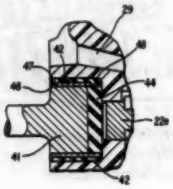
Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 19, 1983, Ser. No. 459,216

Claims priority, application Japan, Jan. 23, 1982, 57-007040[U]

Int. Cl.³ B60T *13/54*

U.S. Cl. 91—369 A **6 Claims**



1. A vacuum booster comprising:

a push rod;

a housing having a first and second compartment;

power piston means located in said housing and operated by a pressure differential between said first and second compartment and which further comprises a small diameter portion and a large diameter portion;

control valve means operatively associated with said push rod and located within said power piston means for controlling the pressure differential between said first and second compartments in response to the movement of said push rod;

output means having a first end slidably disposed within said large diameter portion of said power piston means wherein said control valve means further comprises an air-valve element one end of which is slidably disposed in said small diameter portion of said power piston means;

a resilient reaction disc located adjacent said first end of said output means and disposed within said large diameter portion of said power piston means;

a metallic sleeve contacting an outer peripheral portion of said first end of said output means and an outer peripheral portion of said reaction disc; and

a resilient member provided between a cylindrical surface portion of said large diameter portion of said power piston means and said metallic sleeve wherein said resilient member has an inner cylindrical surface in contact with an outer cylindrical surface of said metallic sleeve and said metallic sleeve has a hole formed therein for substantially interrupting a compression reaction force transmission from said reaction disk to said resilient member.

4,494,444

APPARATUS FOR CUTTING GLASS

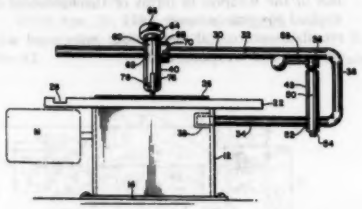
Joseph H. Masse, 151 Coggeshall St., New Bedford, Mass. 02746

Filed Apr. 22, 1983, Ser. No. 487,612

Int. Cl.³ C03B *33/02*

U.S. Cl. 83—886 **11 Claims**

1. An apparatus for cutting glass or other sheet material comprising a housing including a table having an upper substantially planar supporting surface for supporting and moving said sheet with respect thereto, a substantially U-shaped member having an upper arm and a lower arm, said lower arm fixedly connected to said housing for supporting said upper arm in a position overlying said table, a scoring element positioned on said upper arm for spring biased pressure contact with sheet disposed on said table, and means for temporarily forcing said upper arm upwardly with respect to said table so



as to adjust said pressure contact between said scoring element and said sheet and for thereafter releasing said force.

4,494,445

TANDEM-TYPE BRAKE BOOSTER

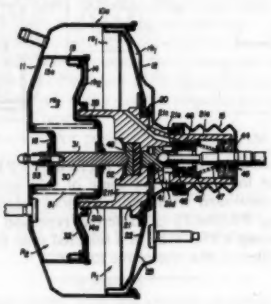
Yohichi Furuta, Chiryu; Kaoru Tsubouchi, and Michiharu Nishii, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 23, 1983, Ser. No. 554,679

Claims priority, application Japan, Dec. 3, 1982, 57-183948[U]

Int. Cl.³ F15B *9/10*; F01B *19/00*

U.S. Cl. 91—369 A **6 Claims**



1. A tandem-type brake booster comprising a closed shell assembly composed of front and rear chambers defined by a partition member therein and first and second power pistons coaxially disposed in said front and rear chambers, respectively, said power pistons being operatively coupled with each other and passing through a substantially central portion of said partition member, each of said front and rear chambers including a constant-pressure chamber subjected to a vacuum and a variable-pressure chamber, respectively, and means for selectively communicating said variable pressure chamber of said rear chamber with said constant pressure chambers and atmosphere, said constant-pressure chambers in said front and rear chambers being held in communication with each other, said variable-pressure chambers in said front and rear chambers being in communication with each other, said power pistons being axially movable in unison by pressure differences between said constant-pressure chambers and said variable-pressure chambers, respectively, one of said front and rear chambers having an outside diameter smaller than that of the other chamber and that of the power piston disposed in said other chamber, and the power piston in said other chamber having an outer peripheral portion overlapping an outer peripheral portion of said one chamber when said power piston are moved forward or returned to inoperative positions thereof

wherein said closed shell assembly further comprises a cup-shaped front shell having an open rear end and a rear shell coupled to said open rear end of said front shell, and wherein said partition member further comprises a cup-shaped reinforcement member having a diameter smaller than that of said front shell and reinforcing said front shell and a partition closing a rear opening in said reinforcement member.

4,494,446

POWER ASSISTED STEERING GEAR

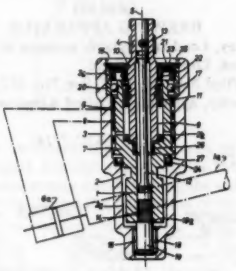
Gordon E. G. Webber, and Alan G. Wilson, both of Bristol, England, assignors to Cam Gears Limited, Hertfordshire, England

Filed May 23, 1983, Ser. No. 496,942

Claims priority, application United Kingdom, Jun. 18, 1982, 8217633

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—375 A **13 Claims**



1. A power assisted steering gear comprising a toothed part having an axis about which it is rotatably mounted for driving an output member, a rotatably mounted input shaft coaxial with said toothed part, bearing means by which said toothed part is rotatably mounted in a housing, axially extending rod means which is coaxial with and couples together said input shaft and toothed part, valve means reacting between said toothed part and input shaft, said valve means being responsive to rotation of the input shaft for controlling flow of fluid under pressure to a servo motor associated with the output member to provide power assistance to displacement of that member, said toothed part being tubular with the rod means extending therethrough, and said rod means having an end projecting axially from the toothed part to provide a journal by which the toothed part is rotatably borne, said end projecting from the toothed part being engageable with said bearing means during location of said tooth part within the housing.

4,494,447

SELF-LATCHING ECCENTRIC CAM FOR DUAL STROKE COMPRESSOR OR PUMP

Francis J. Sisk, San Mateo, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

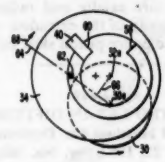
Filed Nov. 2, 1982, Ser. No. 438,428

Int. Cl.³ F15B *15/64*; F16H *53/04*; F04B *39/00*

U.S. Cl. 92—13.3 **8 Claims**

1. In a dual capacity compressor of the type having different stroke lengths through motor operation driving a crankshaft in one and an opposite direction effecting rotative repositioning of an eccentric cam on a crankshaft crankpin for a longer stroke length at one end point and a shorter stroke length at an opposite angularly displaced end point of rotation limiting means preventing rotation of said cam on said crankpin beyond said end positions, the improvement comprising:

said rotation limiting means has a circumferential extent requiring the rotation of said cam relative to said crankpin to be significantly in excess of 180° in repositioning from one end point to the other end point to obtain a centrifugal force torque component urging said cam in a rotative direction opposite the direction of rotation of said crankpin at at least one of said end points to promote maintaining the rotative repositioning of said cam on said crankpin;



said centrifugal force torque component at said end points being a function of the distance between the center of said crankpin, and a centrifugal force line which passes through the center of mass of said cam and the center of said crankshaft.

4,494,448

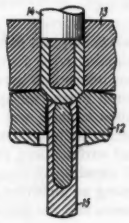
COMPOSITE PISTON OF POSITIVE DISPLACEMENT HYDRAULIC MACHINE AND METHOD FOR MANUFACTURING SAME

Vitaly A. Eystratov; Mikhail Y. Elkin; Viktor Y. Danilenko; Ivan M. Stepunin; Nikolai E. Tsenta; Sergei A. Rud, and Leonid M. Belferman, all of Kharkov, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Promyshelennykh Gidroprivodov I Girodoavtomatiki, Kharkov, U.S.S.R.

Filed Feb. 23, 1982, Ser. No. 351,346

Int. Cl.³ F16J *1/00*; B23P *15/10*

U.S. Cl. 92—172 **6 Claims**



1. A method of manufacturing a composite metal piston for a positive-displacement hydraulic machine consisting of the steps of fabricating blanks of a piston with a hollow skirt having a blind bore defining a cavity in said skirt and a core of lesser length than said bore disposed in the hollow skirt bore each blank made as a cylinder blank and each of a different metal, said piston and core cylinder blanks respectively having before deformation thereof by cold extrusion an outside diameter greater by a factor of $1/\epsilon$ than that of the finished piston and of the diameter of its finished core, where ϵ is the permissible degree of deformation by cold extrusion for the specific metal, the metal of said core blank having a lesser specific weight and possessing a lesser resistance to plastic deformation than the metal of said piston blank, the diameter of the axial bore being sized on a basis of a direct proportionality between the cross-sectional areas of the piston blank and the finished composite piston and the cross section and length of the core being sized on a basis of direct proportionality to the diameter and length of the axial bore and difference in metals of the piston blank and core blank and the composite piston cross-sectional areas, inserting said core cylinder blank axially into said axial bore to form a composite piston blank with the core fitting in said axial bore and having an end thereof spaced

axially inwardly in said bore from an open end thereof, effecting plastic deformation of said composite piston blank radially inwardly and axially by cold extrusion in a die and while effecting said deformation of the composite piston blank while simultaneously cold flowing metal of said core axially and constricting radially inwardly the open end of said axial bore to effectively hold said core axially and radially permanently immobile in the skirt cavity of the extruded, composite piston with the core filling the entire piston skirt cavity.

4,494,449

INSULATED LAY-IN DIFFUSER

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Filed Mar. 22, 1982, Ser. No. 360,804

Int. Cl.³ F24F *13/00*

U.S. Cl. 98—40.05 **3 Claims**

1. A diffuser means for interfacing a duct with an area to be serviced by the duct, the diffuser means comprising:

(a) a housing having a shaped, contoured surface and including a substantially centrally disposed collar for engaging portions of the duct and terminating edge portions for interfacing with the area to be serviced;

(b) insulation means positioned on the shaped surface and extending between the collar and the terminating edge portions of the housing;

(c) wherein the contoured surface is a curvilinear surface including at least one node point located intermediate the collar and the terminating edge portions of the housing;

(d) spacing plate means interposed between the shaped surface and the insulation means for spacing the insulation means from the shaped surface; and

(e) the spacing plate means includes a base adapted for location over the shaped surface, and protrusions extending from the base and capable of engaging the insulation means, thereby forming an air space between the base of the spacing plate means and the insulation means.

4,494,450

PROTECTIVE COVER FOR AN EXHAUST FAN MOTOR

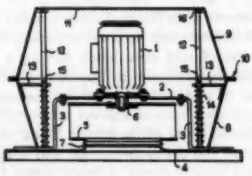
Pierre Avril, Champagne sur Seine, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Dec. 18, 1981, Ser. No. 332,104

Claims priority, application France, Dec. 31, 1980, 80 27915

Int. Cl.³ F24F *7/02*

U.S. Cl. 98—42.02 **5 Claims**



1. A motor-exhaust fan assembly having support means adapted to support the assembly at an end of an exhaust shaft and having a protective cover substantially surrounding the motor of the assembly, means urging said protective cover to move in a predetermined direction relative to said motor to expose said motor for cooling the same in the event of a severe rise in the temperature of gases exhausted from said exhaust shaft by said assembly, and restraining means for preventing said protective cover from moving in said predetermined direction until said severe rise in temperature, said restraining means comprising first means attached to said cover and movable therewith in said predetermined direction when said cover is not restrained by said restraining means and second means attached to said support means and positioned directly in the path of movement of said first means in said predetermined direction to block movement of said first means in said predetermined direction, said second means being composed of a fusible material which melts in response to said severe rise in temperature, whereupon said first means is no longer blocked and said cover is permitted to move in said predetermined direction by said urging means.

4,494,451

BREWING APPARATUS

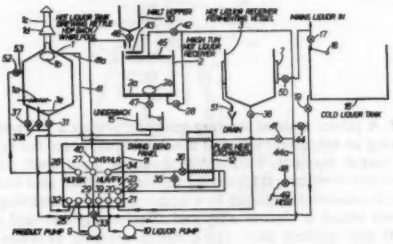
John F. Hickey, London, England, assignor to Hickey & Company Limited, London, England

Filed Nov. 16, 1982, Ser. No. 442,154

Claims priority, application United Kingdom, Nov. 17, 1981, 8134643

Int. Cl.³ C12C *7/14*

U.S. Cl. 99—276 **9 Claims**



1. Brewing apparatus which comprises a first vessel including heating means, a second vessel including strainer means, a third vessel, coupling pipes coupling the first, second and third vessels together, and a valve means and pump arrangement by means of which the three vessels can be coupled via the coupling pipes as necessary for fluid transfer purposes so that the first vessel can be used firstly as a hot liquor tank to produce hot liquor which is transferred to the third vessel which serves firstly as a hot liquor container, from which in use the hot liquor is transferred to the second vessel wherein it is mashed with malt to produce a wort and which serves firstly as a mash tun, from which the wort is transferred to the first vessel therein to be heated with hops whereby the first vessel serves secondly as a brewing kettle from which the resultant brew is transferred to the third vessel which serves secondly as a fermenting vessel.

4,494,452

WINE AERATOR

Craig Barzso, 5508 Charlcote Rd., Bethesda, Md. 20817

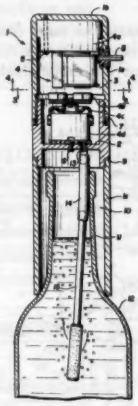
Filed May 2, 1983, Ser. No. 490,507

Int. Cl.³ B01F *3/04*

U.S. Cl. 99—323.1 **8 Claims**

1. A wine aerator for expediting the breathing time of wine just before serving comprising, a housing, a motor driven air pump means mounted in one end of said housing, recess means provided in the opposite end of said housing for freely receiving the neck of a bottle of wine to be aerated, and a tube extending from said air pump means into the wine within the

bottle, the free end of said tube being positioned just below the wine surface, whereby air from the pump is infused into the wine, thereby causing the wine to circulate in the bottle above the bottom thereof to create an oxygen enriched froth above



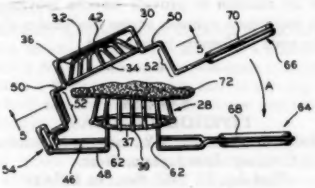
the wine surface, whereby the surface area of the wine is effectively increased without removing the wine from the bottle while simultaneously not disturbing the sediment on the bottom of the bottle during the circulation of the wine.

4,494,453

TORTILLA BASKET FRYER

Wade A. Bentson, San Francisco, Calif., assignor to Amco Corporation, Chicago, Ill.

Filed Nov. 18, 1983, Ser. No. 553,369
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—353 **11 Claims**



1. A device for deep frying tortillas, said device comprising a single nesting pair of wire frame baskets, defining a somewhat dish shaped space being between them to receive and mold the shape of a food product, a pair of elongated handles extending from one side of each one of the baskets, said handles being shaped to form a vertical stand for supporting and holding said baskets in an elevated and inverted position to facilitate a loading and unloading of said food product in said dish shaped space.

4,494,454

TACO BOARD

Conrad Sparks, 12251 Haga St., Garden Grove, Calif. 92641

Filed Mar. 16, 1982, Ser. No. 358,696
Int. Cl.³ A21B *5/02, 5/08*
U.S. Cl. 99—426 **3 Claims**

1. A taco former, comprising:

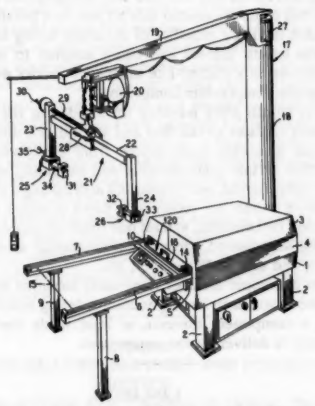
A shaper member having two broad, opposed substantially flat surface portions connected by a flat side portion narrower than said broad, flat surface portions and disposed substantially perpendicularly to said substantially flat surface portions at edges thereof, a convex side portion opposite the narrow flat side portion, the convex side portion being convex about an axis substantially parallel to the narrow flat side and a handle member pivotally attached to said shaper member through a pivot pin disposed substantially parallel to the narrow substantially flat side portion, said shaper member having a thickness and shape such as to be suitable for forming tortillas into taco shells.

4,494,455

DEVICE FOR PREPARING DIE MEMBERS OF A PLATEN PRESS

Gregor Schoch, Crissier, Switzerland, assignor to Bobst S.A., Lausanne, Switzerland

Filed May 18, 1983, Ser. No. 495,583
Claims priority, application Switzerland, May 18, 1982, 3075/82
Int. Cl.³ B41F *1/38*
U.S. Cl. 101—3 R **6 Claims**



1. A device for preparing a die member of a platen press to have recesses in registry with tools of a punch member, said device having a pressing station with means for receiving a stack of members including at least one backup member, a die member and the punch member, said pressing station having means for applying pressure to the stack to at least transfer an outline of the tools of the punch member to the surface of the die member, a loading station having means for loading and unloading a member of the stack into and out of the loading station, said loading means including means for positioning

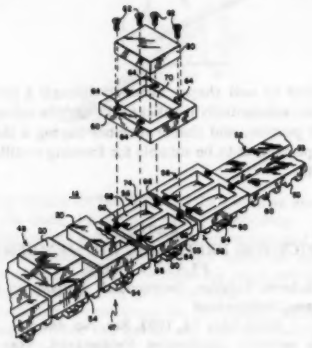
each of the members in the desired orientation; and transport means for moving the stack between the pressure station and the loading station, said transport means including a plate receiving this stack and being movable between said stations so that after loading the stack on the plate, the transport means transports the stack and plate into the pressing station wherein the means for pressing applies pressure to cause a transfer of the outline of the tools of the punch member onto a surface of the die member.

4,494,456

CONVEYOR BELT APPARATUS

Frederick C. Pink, Franklin, Mass., assignor to Component Marking Systems, Inc., Norwood, Mass.

Filed Aug. 20, 1981, Ser. No. 294,630
Int. Cl.³ B41F *17/00*
U.S. Cl. 101—35 **23 Claims**



1. In a conveyor system for delivering electrical or mechanical components to and from a marking device for individual marking thereof having first and second elongated closed loop endless belt elements spaced side by side in a parallel arrangement, each having a plurality of inwardly facing teeth spaced along the length thereof and being adapted to be synchronously driven in a tractor-like manner, a carrier assembly for carrying the components comprising

a short length plate member for straddling the outwardly facing surfaces of the first and second belt elements,

multiple mounting arms spaced from the inwardly facing surface of said plate member and extending substantially laterally thereto, each mounting arm having a longitudinal groove therein for receiving a tooth of either the first or second belt element, at least one tooth of each belt element being so received, means interconnecting said mounting arms and said plate member, and

at least one upper member removably mounted to said plate member and each having accommodating means for holding a component thereon, at least while the conveyor system is delivering the component.

4,494,457

APPARATUS FOR CONVERSION OF A PRINTING PRESS TO OFFSET PRINTING

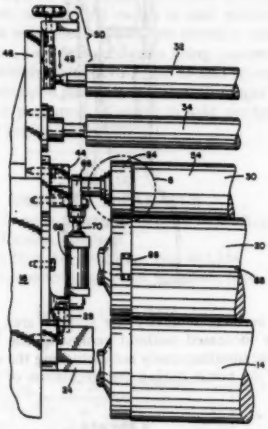
Michael A. Schwartz, Batavia, and Toshio Yamagata, Chicago, both of Ill., assignors to Press Machinery Corporation, Bensenville, Ill.

Division of Ser. No. 275,208, Jun. 19, 1981, Pat. No. 4,414,895. This application Sep. 27, 1982, Ser. No. 424,080
Int. Cl.³ B41F *13/18*
U.S. Cl. 101—217 **1 Claim**

1. Apparatus for the smooth operation of an offset impression cylinder and an offset blanket cylinder pair of cylinders in an offset printing printing press, in which the offset blanket cylinder has a blanket and a blanket slot, the apparatus comprising:

a bearer plate adapted to be mounted to the offset blanket cylinder in alignment with the blanket slot and bridging the blanket slot;

a cylindrical bearer having an outer diameter reduced from the outer diameter of the offset impression cylinder by an amount about twice the radial thickness of the bearer plate; and



bearing means for rotatably mounting the bearer on the offset impression cylinder in a location for cooperative contact of the bearer with the bearer plate on rotation of the offset impression cylinder and the offset blanket cylinder;

the bearer and bearer plate cooperatively contacting each other on rotation to provide smooth movement of the offset impression cylinder across the blanket slot;

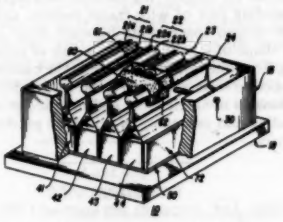
whereby print uniformity is improved.

4,494,458

TYPEHOLDING CHASE

Lewis C. Price, Jr., Yonkers, N.Y., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jul. 27, 1983, Ser. No. 517,619
Int. Cl.³ B41B *1/18*
U.S. Cl. 101—391 **14 Claims**



14. A holder for type elements having opposed concave mounting surfaces, comprising:

a housing;

a plurality of type clamps contained within said housing, each of said type clamps comprising a pair of resilient support members spaced from each other and each resilient support member including an outwardly convex

mounting portion as well as an inclined planar camming surface, and a base portion;

for each pair of resilient support members, a spacer block placed between the base portions and abutting against the inclined planar surfaces; and

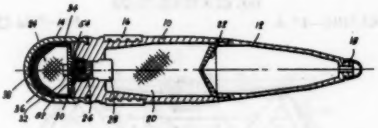
a biasing plate which presses the spacer blocks against the inclined planar surfaces so as to induce a divergent bias on said mounting portions, which engage the concave mounting surfaces of the type elements.

4,494,459

EXPLOSIVE PROJECTILE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 5, 1980, Ser. No. 184,605
Int. Cl.³ F42C *15/26*
U.S. Cl. 102—235 **8 Claims**



1. A projectile adapted to receive a longitudinal acceleration of limited time duration and a rotational acceleration of limited time duration comprising:

a housing having a longitudinal axis;

a forward high explosive charge assembly disposed in a forward part of said housing;

an aft high explosive charge assembly disposed in an aft part of said housing;

a time delay fuze mechanism having a safed disposition and an armed disposition, and disposed in said housing between said forward and aft charges,

said fuze mechanism including

a substantially spherical cavity which is symmetrical about said axis,

a substantially spherical rotor disposed in said cavity and having an axis of mass symmetry and a diametral bore which is coaxial with said axis of mass symmetry and contains a detonator assembly therein serving to function both said forward and aft charge assemblies concurrently;

said aft charge assembly having a mode of operation to initially secure said fuze mechanism in its safed disposition, subsequent to set-back of said projectile to release said fuze mechanism to permit the arming thereof, and thereafter to secure said fuze mechanism in its armed disposition;

said aft charge assembly is disposed in a first fixed cavity in said housing, is disposed for fore an aft movement along said longitudinal axis, and is initially biased forwardly by biasing means into a disposition whereat it interlocks with and secures said rotor in a disposition whereat said rotor bore is not aligned with said longitudinal axis;

said aft charge assembly has a smaller volume than the volume defined by said first fixed cavity in said housing and defines a first residual cavity in said housing;

said biasing means includes a volume of liquid which is releasably contained in said first residual cavity which is initially disposed aft of said aft charge;

said aft charge assembly defines a passageway in said first cavity so constructed and arranged that upon forward longitudinal acceleration of said projectile, said aft charge and said rotor undergo relative set-back to compress said biasing means to release liquid to pass through said passageway, and as said aft charge assembly progressively sets-back it progressively decreases the volume of said first residual cavity aft of said aft charge assembly and progressively defines a second residual cavity forward of said aft charge assembly of progressively increasing volume, while said liquid passes through said passageway from said first residual cavity into said second residual cavity.

7. A projectile adapted to receive a longitudinal acceleration of limited time duration and a rotational acceleration of limited time duration comprising:

a housing having a longitudinal axis;

a forward high explosive charge assembly disposed in a forward part of said housing;

an inertial mass assembly disposed in an aft part of said housing;

a time delay fuze mechanism hving a safed disposition and an armed disposition, and disposed in said housing between said forward charge assembly and said inertial mass assembly;

said fuze mechanism including

a substantially spherical cavity which is symmetrical about said axis,

a substantially spherical rotor disposed in said cavity and having an axis of mass symmetry and a diametral bore which is coaxial with said axis of mass symmetry and contains a detonator assembly therein serving to function said forward charge assembly;

said inertial mass assembly having a mode of operation as to initially secure said fuze mechanism in its safed disposition, subsequent to set-back of said projectile to release said fuze mechanism to permit the arming thereof, and thereafter to secure said fuze mechanism in its armed disposition;

said inertial mass assembly is disposed in a first fixed cavity in said housing, is disposed for fore and aft movement along said longitudinal axis, and is initially biased forwardly by biasing means into a disposition whereat it interlocks with and secures said rotor in a disposition whereat said rotor bore is not aligned with said longitudinal axis;

said inertial mass assembly has a smaller volume than the volume defined by said first cavity in said housing and defines a first residual cavity in said housing;

said biasing means includes a volume of fluid which is releasably contained in said first residual cavity which is initially disposed aft of said inertial mass assembly;

said inertial mass assembly defines a passageway in said first cavity so constructed and arranged that upon forward longitudinal acceleration of said projectile, said inertial mass assembly and said rotor undergo relative set-back to compress said biasing means to release fluid to pass through said passageway, and as said inertial mass assembly progressively sets-back it progressively decreases the volume of said first residual cavity aft of said inertial mass assembly and proressively defines a second residual cavity forward of said inertial mass assembly of progressively increasing volume, while said fluid passes through said passageway from said first residual cavity into said second residual cavity.

4,494,460

HIGH ACCELERATION SUPPORT AND POSITIONING DEVICE

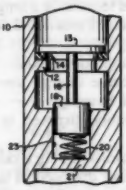
Inge Maudal, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 6, 1982, Ser. No. 395,430
Int. Cl.³ F42B *33/00*
U.S. Cl. 102—293 **8 Claims**

1. A protective device for supporting fragile, movable apparatus in a projectile housing during a high acceleration launch of the projectile, comprising:

crushable support means attached to the inside of the projectile housing for supporting said fragile, movable apparatus in said projectile housing prior to and during launch, which crushable support means is crushed during launch; and

resilient positioning means mounted within each projectile housing for holding said fragile, movable apparatus in position prior to launch and for compressing during



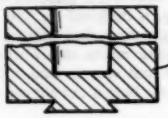
launch, said resilient positioning means returning said fragile, movable apparatus substantially to its original position free of said crushed support means after launch.

4,494,461

METHOD AND APPARATUS FOR FORMING A THIXOFORGED COPPER BASE ALLOY CARTRIDGE CASING

Michael J. Pryor, Woodbridge; Joseph Winter, New Haven, and Jonathan A. Dantzig, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 6, 1982, Ser. No. 337,560
Int. Cl.³ F42B *9/26, 9/28*
U.S. Cl. 102—464 **10 Claims**



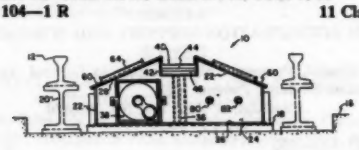
1. A cartridge casing comprising:
an elongated, thin-walled member formed from an age hardenable copper base alloy;
said copper base alloy being in a condition wherein it has been forged from a semi-solid slurry and having a tensile strength of at least about 80 ksi, a yield strength of at least about 65 ksi and a structure comprising a plurality of discrete particles in a solid surrounding metal matrix;
said semi-solid slurry comprising said surrounding metal matrix in a molten condition and said discrete particles within said molten matrix.

4,494,462

THAW SHED HEATER

John J. Kane, Erie, Pa., assignor to The Pittsburgh & Conneaut Dock Company, Conneaut, Ohio

Filed Jun. 4, 1982, Ser. No. 385,028
Int. Cl.³ B61B *12/00*; B61D *27/00*; F24C *3/00*
U.S. Cl. 104—1 R **11 Claims**



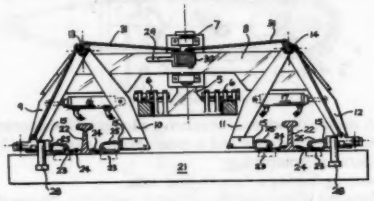
1. Railroad car heating apparatus for disposition on a railroad between rails supported thereon, comprising
(a) generally rectangularly arranged metal plates defining upstanding end and side walls of an elongated chamber adapted for reception between said rails, said metal plates including upwardly facing heat radiating cover plates extending transversely of said end and side walls, respectively, to form a roof substantially closing said chamber;
(b) means forming an elongated partition wall positioned in spaced, parallel relation to said side walls and with opposite ends spaced from said end walls to divide said chamber into coextensive, parallel, interconnected passages;
(c) a fuel-fired burner communicating with one of said passages and being operable for directing combustion gases through said chamber along recirculating flow paths through said passages.

4,494,463

RAIL FASTENER APPLICATOR

Hartley F. Young, Victoria; Wally A. Remes, and John L. Collins, both of Adelaide, all of Australia, assignors to Ralph McKay Limited, Maidstone, Australia

Filed Aug. 23, 1982, Ser. No. 410,649
Claims priority, application Australia, Sep. 1, 1981, PF0537
Int. Cl.³ E01B *29/24*
U.S. Cl. 104—17 A **4 Claims**



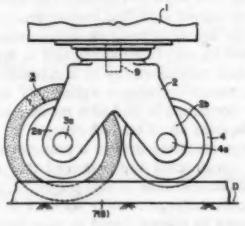
1. A rail fastener applicator for use with rail fasteners which are applied horizontally in a direction at right angles to the longitudinal dimension of the rail comprising a carrier, a frame on said carrier adapted to span two rails, a pair of pivoted arms at either end of said frame, said arms being independent from said frame and pivoted to move in a plane perpendicular to the longitudinal dimension of said rails, each arm terminating in abutment faces each of which is adapted to contact an individual rail fastener, means to move said arms in unison such that the abutment faces on each pair of arms either move toward each other to apply a pair of rail fasteners or move away from each other, and said frame being pivoted to enable rotation of said frame in a horizontal plane.

4,494,464

CASTOR WHEEL CARRIAGE

Kazuo Fujita, 2971-650, Hishino, Oaza, Seto-shi, Aichi-ken, Japan

Filed Oct. 13, 1981, Ser. No. 311,020
Int. Cl.³ B60P *17/02*; B61F *3/16, 5/38*; B61T *9/00*
U.S. Cl. 105—170 **2 Claims**



1. The combination of a carriage and a castor wheel assembly wherein said castor wheel assembly is pivotally supportably mounted on said carriage, said castor wheel assembly

being adapted to be mounted on at least one of a floor and a pair of twin rails, said castor wheel assembly comprises a first wheel having inclined wheel portions at the edges of its periphery for engaging a pair of twin rails and a raised wheel portion defined by the periphery of the first wheel between the inclined wheel portions for engaging a floor when said wheel is dismounted from the pair of twin rails, said raised wheel portion being radially outwardly projected from said inclined wheel portions; and a second wheel having inclined wheel portions at the edges of its periphery for engaging the twin rails and said second wheel acting as a guide for said first wheel by engaging said twin rails for stabilized movement of said first wheel on said twin rails.

4,494,465

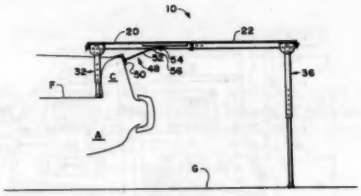
TABLE FOR USE WITH AUTOMOBILE TRUNKS AND THE LIKE

Charles M. Fick, Jr., 3832 Dance Mill Rd., Phoenix, Md. 21131

Filed Nov. 1, 1983, Ser. No. 548,146

Int. Cl.³ A47B *37/04*

U.S. Cl. 108—44 **2 Claims**



1. In a folding table having a supporting system including at a first end, means for support on a motor vehicle and at a second end, a pair of legs with means for independent length-adjustment for ground support substantially at table height, and said motor vehicle being of a type having at the rear a cargo area floor and adjacent structure, the improvement comprising: means adapting said supporting system for levelling said folding table in any desired direction, including said means for support on a motor-vehicle comprising a second pair of legs with independent length-adjustment, said second pair of legs being sufficiently shorter than the first-said pair of legs for resting on a said cargo area floor and positioning said first end substantially at table height, means for bracing against said adjacent structure when the second pair of legs rests on the cargo area floor, said bracing means located for coacting with the second pair of legs for adjustably clamping said adjacent structure, the bracing means including an arm, pivot means slidably affixing a first end of the arm beneath the folding table, and an angle pivotally affixed on a second end of the arm.

4,494,466

TABLE WITH A MECHANISM FOR AUTOMATICALLY VARYING THE SIZE OF THE TABLETOP

Ervin H. Synek, 346 N. Justine Ave., Chicago, Ill. 60607, and David Volejnicek, 4735 W. Beaubien Blvd., Lisle, Ill. 60532

Filed Jan. 28, 1982, Ser. No. 343,547

Int. Cl.³ A47B *1/03*

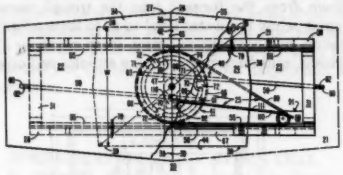
U.S. Cl. 108—85 **10 Claims**

1. An improved table comprising:

a pair of side leaves movable with respect to each other to abut each other for forming a tabletop of a first size;

a center leaf selectively interposable between the pair of side laves for forming therewith a tabletop of a second size; and

moving means coupled to the pair of side leaves and the center leaf for selectively moving the side leaves into abutment with each other while at the same time lowering and rotating the center leaf to remove the center leaf from in between the side leaves, and for selectively separating the side leaves while at the same time rotating and raising



the center leaf to interpose the center leaf between the pair of side leaves.

4,494,467

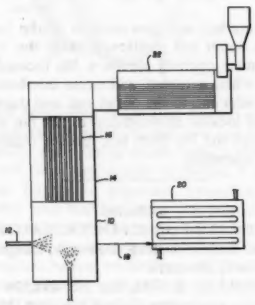
APPARATUS AND TECHNIQUE FOR COMBUSTION OF METHANOL OR SIMILAR FUELS

Daniel Berman, Harav Friedman 49, Tel Aviv, Israel

Filed Apr. 19, 1982, Ser. No. 369,611

Int. Cl.³ F23B *7/00*; C01B *2/14*

U.S. Cl. 110—234 **1 Claim**



1. A technique for combustion of methanol or other alcohol based fuel containing a high percentage of water, comprising the steps of:

feeding methanol or other alcohol based fuel to a first combustion chamber;

heating methanol to about 250° C. or other alcohol fuel to convert it to steam and a hydrogen fuel in said first combustion chamber;

passing the resultant hydrocarbon fuel upwardly to a second combustion chamber for combustion thereof and burning said hydrocarbon fuel in said second combustion chamber to produce heat;

supplying the steam from said first combustion chamber horizontally to utilization apparatus for heating a fluid thereby;

and

supplying combustion products from the second combustion chamber to a heat exchanger for heating of a fluid thereby.

4,494,468

STEAM GENERATOR WITH GAS RECIRCULATION TO THE ASH HOPPER REGION OF THE FURNACE

Earl K. Rickard, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

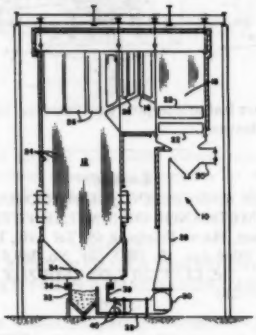
Filed Dec. 23, 1983, Ser. No. 565,090

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—234 **1 Claim**

1. In a steam generating unit having a furance and heat exchange means for generating steam therein, an ash hopper

located beneath the furnace, said furnace having opening means connecting the ash hopper to the furnace, water-filled trough means surrounding the ash hopper, wall means extending down from the furnace into the trough means, which terminates below the water level so as to form a liquid seal for preventing hot combustion gases from escaping therefrom, duct means, said duct means having an inlet end connected to



the steam generating unit downstream of the heat exchange means, and an outlet end positioned inside the liquid seal but below the furnace opening means, a fan located in the duct means which when actuated will cause combustion gases to flow from the inlet end to the outlet end, and damper means in the duct means located downstream of the fan which can be closed to protect the fan from hot furnace combustion gases when it is not operating.

4,494,469

STEPPED GRATE FOR AN INCINERATOR PLANT

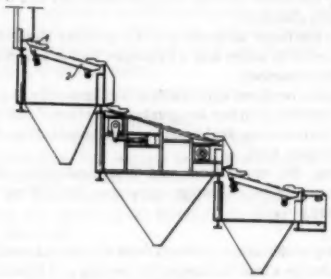
Gabriel da Silva Pinto, Glostrup, Denmark, assignor to Volund Miljotekalk A/S, Denmark

Filed May 4, 1983, Ser. No. 491,396

Claims priority, application United Kingdom, May 13, 1982, 8213940

Int. Cl.³ F23H *7/08, 7/14*

U.S. Cl. 110—281 **3 Claims**



1. In a stepped grate for conveying garbage in a direction of travel in an incinerator plant and comprising one or more stepped grates in succession inclined forwardly in said direction of travel, each said grate comprising a plurality of grate blocks placed in a plurality of laterally adjacent stepped rows oriented in parallel with said direction of travel, said grate blocks being suppoted upon parallel placed grate beams in said direction of travel, where every other said row of grate blocks is movable reciprocally in parallel with said direction of travel whereas rows of grate blocks intermediate said every other reciprocally movable row of grate blocks are stationary, wherein the laterally adjacent grate blocks of said movable and stationary rows are placed in staggered position in said direction of travel a distance corresponding to half a grate block length and wherein alternate rows of grate blocks terminate with half grate blocks, whereby colliding contact between said laterally adjacent grate blocks is avoided during said reciprocal movement.

4,494,470

METHOD FOR IDENTIFYING SIZE AND/OR TYPE OF WORKPIECE RECEIVING MEANS AND SEWING APPARATUS FOR CARRYING OUT SAID METHOD

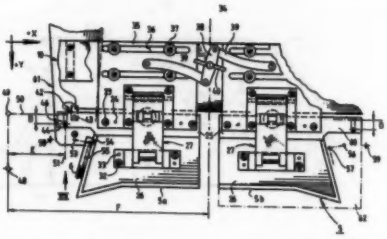
Jochen Fischer, Detmold, and Hans Scholl, Oerlinghausen-Lipperreihe, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,591

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216528

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **12 Claims**



6. Apparatus for identifying the type and/or size of a workpiece receiving device which can be adjusted in size in a coordinate direction and is inserted in an automatic sewing machine before the beginning of a sewing process, comprising: two computerized servo motors for two mutually perpendicular coordinate directions to generate a programmed relative movement between a sewing head and a workpiece in a plane substantially perpendicular to the direction in which the sewing needle moves; an interchangeable workpiece receiving device adjustable in size in one coordinate direction and assigned to the seam to be sewn; means for generating at the computer a signal identifying the particular workpiece receiving device being employed; a sensor assigned to the sewing head or lower arm; a first and second triggering means for activating the sensor and assigned to the workpiece receiving device, said sensor releasing a signal to the computer when the sensor and the first triggering means meet while the sewing head is traveling along a first coordinate direction relative to the workpiece receiving device, and when the sensor and the second triggering device meet while the sewing head is traveling along a second coordinate direction relative to the workpiece receiving device.

4,494,471

BUTTONHOLE FOOT AND SHANK ASSEMBLY

Thaddeus J. Zylbert, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

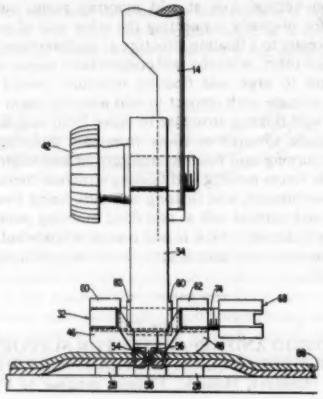
Filed Feb. 21, 1984, Ser. No. 581,832

Int. Cl.³ D05B *29/08*

U.S. Cl. 112—235 **6 Claims**

1. In combination: a presser foot for use in the formation of buttonholes on a zig zag sewing machine, said presser foot including a sole plate with a laterally extending opening for the needle of the machine to pass through and form zig zag stitches for right and left legs of a buttonhole, the underside of the sole plate including a longitudinal groove on each side of a dividing ridge for loops of zig zag stitches in right and left buttonhole

legs, respectively, to pass through during the formation of a buttonhole; a presser bar shank securable in the machine; and means supporting the foot for pivotal movement on the presser



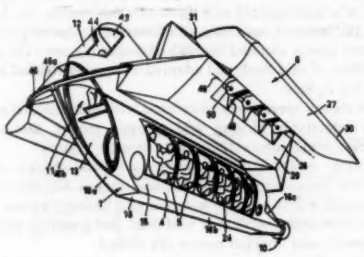
bar shank, said means including an adjustable screw with which the foot can be moved laterally relative to the shank to position the dividing ridge on the underside of the sole plate with respect to the needle.

4,494,472

FLOATING AND NONSUBMERSIBLE NAUTICAL CRAFT

Jacques Rougerie, 13 rue Chapon, 75003 Paris, France

Filed Feb. 17, 1982, Ser. No. 349,531
Claims priority, application France, Feb. 18, 1981, 81 03159
Int. Cl.³ B63B *35/72*
U.S. Cl. 114—66 **9 Claims**



1. Floating, nonsubmersible nautical craft comprising a partially immersed hull, intended for the accommodation of passengers, closed over all, provided at the top with means of access normally in constant communication with the atmosphere, and portholes for observation of the underwater medium,

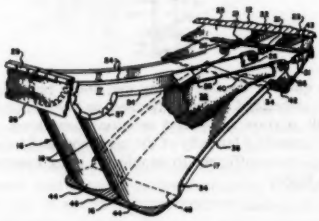
further comprising means of stabilization and buoyancy separate from the hull and means for varying the draft, means of propulsion and a pilot station, the hull and means of stabilization and buoyancy have a modular structure in transverse section, the hull being of generally tubular shape, flattened laterally, with a horizontal main axis having a succession of portholes on each of its longitudinal flanks, the means of stabilization and buoyancy having, in vertical, transverse cross section, the general form of a flat, inverted U and comprising floats movable between two extreme positions, one being low, in which floats are oriented downward, and the other high, in which floats are oriented at least substantially horizontally, characterized by the fact that the means of stabilization and buoyancy includes a chest having, in transverse cross section, the general form of a pentagon limited by an upper side, an outer longitudinal side, an inner lower side and an outer lower side, the latter two defining a lower edge situated substantially at the level of the upper longitudinal border of portholes.

4,494,473

SURFACE EFFECT SHIP STERN SEAL

Anthony Y. Simpson, Slidell, La., assignor to Textron Inc., Providence, R.I.

Filed Jul. 6, 1983, Ser. No. 511,155
Int. Cl.³ B60V *1/16*
U.S. Cl. 114—67 A **16 Claims**



1. A surface effect ship of the type having a main hull subtended by rigid parallel sidehulls and bow and stern seal means for transitionally maintaining an air cushion thereunder;

wherein said stern seal means comprises a plurality of air inflatable finger-like segments extending downwardly below said main hull in side-by-side relation between said sidehulls, each of said segments being formed of flexible air-impervious sheet material arranged in a trough-like configuration having vertically parallel sidewall portions and interconnecting semi-cylindrical rear wall portions

said sidewall portions having upper and lower edge portions oppositely profiled in catenary curve configurations;

tension cord means affixed to said upper edge portions of said sidewall portions and extending in catenary suspended fashion in the fore/aft directions of said main hull, said tension cord means having fore and aft ends thereof connected to said main hull; and

a water-planing front closure plate

supported by said segments to incline upwardly in the direction of the ship forward travel by affixing said lower edge portions to opposite sides of said closure plate, said closure plate having a rearmost end portion arranged to underlie said rear wall portions, and wherein the bottom edge portions of said rear wall portions are unattached to said rearmost end portion of said closure plate, thereby permitting water drainage from said finger-like segments while damping therefrom the buffeting effects of irregular water surfaces over which the ship is traveling.

4,494,474

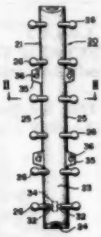
FENDER AND LIFE LADDER IN ONE

Ryosuke Saito, Kobe, Japan, assignor to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 27, 1982, Ser. No. 436,976
Claims priority, application Japan, Oct. 27, 1981, 56-160603
Int. Cl.³ B63B *59/02*
U.S. Cl. 114—219 **20 Claims**

8. A fender and life ladder combination comprising: an elongate main post mountable substantially vertically on a wall surface of a quay or the like during use of the fender and life ladder combination, the main post being composed of resilient material and having a shock-receiving front wall portion, a

pair of resiliently flexible side wall portions connected to respective sides of the shock-receiving front wall portion and extending rearwardly thereof in diverging relation with respect to each other, and a rear wall portion connected to the divergent ends of the side wall portions and having a substantially flat rearmost surface for abutment against the wall surface of a quay or the like during use; and a plurality of rung members embedded in and attached to the shock-receiving front wall portion in spaced relation therealong, the rung members extending laterally of the main post and being spaced apart a distance sufficient to enable the rung members to be used as a ladder.



4,494,475

SYSTEM FOR MOORING A FLOATING STRUCTURE

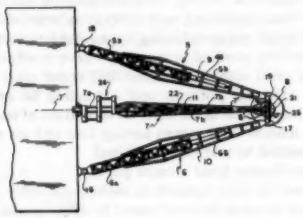
Tor Eriksen, Buoy, Norway, assignor to Moss Rosenberg Verft A/S, Jeloy, Norway

Continuation of Ser. No. 116,846, Jan. 30, 1980, abandoned. This application Nov. 1, 1982, Ser. No. 438,031

Claims priority, application Norway, Feb. 14, 1979, 790494

Int. Cl.³ B63B *21/00*

U.S. Cl. 114—230 **18 Claims**



1. A single-point mooring system for a floating structure comprising, the combination of, a fixed column supported on the sea floor and projecting upwardly, mooring means rotatably mounted on said column to define a fixed mooring point above the water level, and means for attaching a floating structure to said mooring means at a predetermined distance therefrom while permitting said distance to increase or decrease; said attaching means comprising a pair of telescopic mooring arms each of which has a pair of telescoping arm members and a neutral predetermined intermediate length and a maximum extended and minimum collapsed length whereby its effective length may be increased or decreased from said neutral predetermined intermediate length without substantially impairing its structural stability, a pair of compensator means separate from and operatively associated respectively with said arm members of each of said mooring arms for urging their associated arm members to the neutral predetermined intermediate length of the mooring arms while permitting them to be extended or telescoped from said neutral predetermined intermediate length against predetermined forces, each of said compensator means comprising a hydraulic piston and cylinder assembly operatively connected between the arm members of their associated mooring arms; means for separately pivotally attaching one end of each of said arms to said mooring means whereby said arms rotate with said mooring means about a common vertical axis at said mooring point, and separate means for pivotally connecting the other end of each of said arms directly to a floating structure at predetermined distances from each other, whereby said compensator means act through said arms to urge said floating structure toward a desired neutral attitude with respect to said mooring point while permitting said floating structure to move from said desired neutral attitude towards or away from said mooring structure while returning said floating structure to said neutral attitude when the forces moving said floating structure therefrom have been discontinued; said floating structure being free to swing around said vertical axis at said fixed mooring point irrespective of whether or not it is in said neutral attitude but it is urged continuously to said neutral attitude by the action of said compensators.

4,494,476

METHOD AND APPARATUS FOR SUPPORTING LIGHTERS IN LIGHTER-TRANSPORT SHIPS

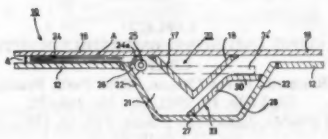
Antti I. Haanterä, Helsinki, Finland, assignor to Valmet Oy, Finland

Filed Aug. 11, 1982, Ser. No. 407,054

Claims priority, application Finland, Aug. 19, 1981, 812554

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—260 **15 Claims**



1. Apparatus for laterally supporting a lighter on the upper surface of a loading deck of a lighter-transport ship, the lighter having rail means provided on its bottom, comprising:

channel means situated beneath and opening onto the upper surface of said deck and adapted to receive the rail means of the lighter;

cover means operatively associated with said channel means for selectively closing said channel means, said cover means being substantially plate-shaped; and

mounting means for mounting said plate-shaped cover means proximate to said channel means for movement between a first position wherein said channel means open onto the upper surface of said deck and a second position wherein said channel means are closed,

said plate-shaped cover means having a thickness such that in said first position said plate-shaped cover means lie on the upper surface of said deck and support the bottom of said lighter so as to provide a clearance between the lighter bottom and the upper surface of said deck.

4,494,477

BOAT HULL

Leslie N. Matthews, 9 Boscombe Ave., City Beach, Western Australia, Australia

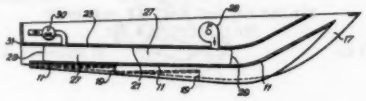
Continuation of Ser. No. 121,071, Feb. 15, 1980, Pat. No. 4,351,262. This application Jul. 21, 1982, Ser. No. 400,419

Int. Cl.³ B63B *1/22*

U.S. Cl. 114—287 **12 Claims**

8. A boat hull capable of efficient operation as a mono-hull vessel and a multi-hull vessel, comprising a plurality of main hull portions laterally spaced apart, a deck extending between each adjacent pair of said main hull portions with said main hull portions extending downwardly from said deck, an intermediate hull portion movably mounted between each adjacent

pair of main hull portions extending substantially from the bow to the stern of said boat hull and below the respective deck, and means to lower and raise at least the stern section of each said intermediate hull portion relative to said respective deck so that when each said intermediate hull portion is fully lowered the boat will have the characteristics of a mono-hull vessel capable of being caused to plane on the surface of the



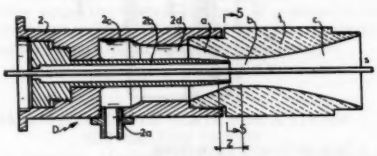
water, and when at least one of said intermediate hull portions is fully raised the vessel will have the characteristics of a multi-hull vessel capable of maintaining the vessel in a planing condition once it has reached the planing condition, said means to raise and lower each intermediate hull portion being compressible so that shock forces applied to each intermediate hull portion during movement of the boat hull over water will be at least partly absorbed by compression of said means.

4,494,478

DEVICE FOR THE INTRODUCTION AND/OR THE REMOVAL, IN AN AIRTIGHT MANNER OF SOLID BODIES ACROSS ONE APERTURE AT LEAST OF AN ENCLOSURE TREATMENT, MORE PARTICULARLY UNDER LOW PRESSURE

Gilles Lacour, Andrezieux-Boutheon, and Serge Esteveny, St. Just-St. Rambert, both of France, assignors to Centre Stéphanois de Recherches Mécaniques Hydromecanique et Frottement, France

Filed Feb. 10, 1983, Ser. No. 465,503
Claims priority, application France, Feb. 11, 1982, 82 02717
Int. Cl.³ B05C *3/00*
U.S. Cl. 118—50 **8 Claims**



1. Device for the introduction and/or the withdrawal of solids through at least one orifice of an enclosed treatment area, low-pressure vat or the like whose pressure is lower than that of the immediate environment, comprising:

a Venturi tube constituting in its interior and in succession a convergence, a neck and a divergence thereby defining a convergence side and a divergence side, whereby a fluid injected through said Venturi tube produces a region of low pressure in said neck;

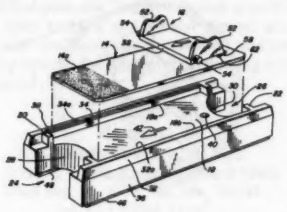
a coaxial sleeve on said convergence side into which the solid to be treated can be introduced, which sleeve is partially engaged inside said Venturi tube over a length determined in such a manner as to create a rapid change of section which defines a dynamic joint zone in combination with the pressure, flow and speed of the fluid injected toward the inside of the Venturi tube.

4,494,479

SLIDE PREPARATION APPARATUS

F. Robert Drury, Lexington, and Marshall D. Graham, Framingham, both of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 434,378, Oct. 14, 1982,. This application Jan. 19, 1983, Ser. No. 459,045
Int. Cl.³ B05C *17/10, 11/04, 13/02*
U.S. Cl. 118—120 **10 Claims**



1. Apparatus for preparing a monolayer film of a biological fluid sample, such as blood or the like, on a slide for microscopic analysis, comprising:

A. a base having opposite extremities and a flat upper surface between said extremities for supporting a slide thereon and a pair of upstanding guide rails extending along opposite side edges of the surface, said guide rails having elongated bearing formations arranged to support a sample spreader thereon during linear movement of the spreader between said guide rails;

B. a spreader for linear movement between said extremities relative to and engaged with the slide for spreading the sample into a monolayer on the slide comprising:

i. a generally planar platform having opposing first and second ends,

ii. projection means protruding laterally from sides of said spreader for engaging said bearing formations for supporting said first platform end above said slide;

iii. a sample spreading blade member depending from the platform adjacent the second end; and

iv. means for moving said spreader linearly,

C. said spreader being constructed and arranged to be positioned for such linear movement between the guide rails along said bearing formations with said blade riding on the slide so that when a sample has been deposited on the slide resting on the said surface, said spreader is movable linearly to enable the blade member to form said monolayer during such linear movement of the spreader between said extremities without engaging said surface.

4,494,480

APPARATUS FOR SPREADING A FLUID ONTO A MOVING WEB OF MATERIAL

Jouko J. Salmela, Majamäenkatu 6, S-20900 Turku 90; Jukka Hietanen, Kalliokatu 11 B, SF-18100 Heinola 10, and Timo Syrjänen, Vuohiniementie 5 B 16, SF-18130 Heinola 13, all of Finland

Filed Jul. 7, 1983, Ser. No. 511,754
Claims priority, application Finland, Jul. 26, 1982, 822614
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—411 **13 Claims**

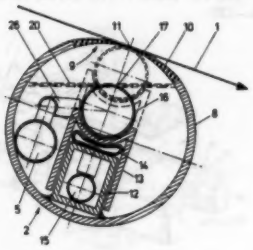
1. An apparatus for spreading a fluid onto a moving web of material, comprising:

an elongated trough extending along a longitudinal axis, having an elongated opening in a peripheral surface thereof and containing a first fluid;

a pipe, extending parallel to said longitudinal axis and having at least one aperture therein for spreading a second fluid in said pipe onto the moving web of material, said aperture being smaller than said opening, said pipe being movably

coupled to said trough for movement between a first position in which said aperture is spaced from said first fluid and a second position in which said aperture is submerged in said first fluid;

first means for conveying said first fluid into and out of said trough;



second means for feeding said second fluid into said pipe; and

means for moving said pipe between said first and second positions.

4,494,481

ANIMAL LITTER COMPOSITION

Pedro A. Rodriguez; James B. Edwards, both of Cincinnati, and Fred M. Habermehl, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 12, 1982, Ser. No. 441,318

Int. Cl.³ A01K *1/015*

U.S. Cl. 119—1 **18 Claims**

1. A solid absorbent material useful as an animal litter, having adsorbed thereto from about 50 ppm to about 3000 ppm of a soluble salt of a transition metal of Group Ib or Group IIb of the periodic table of the elements.

4,494,482

ANIMAL LITTER COMPOSITION

Nancy L. Arnold, Centerville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 441,316, Nov. 12, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 546,361

Int. Cl.³ A01K *1/015*

U.S. Cl. 119—1 **19 Claims**

1. A solid absorbent material useful as an animal litter, having adsorbed thereto from about 25 ppm to about 500 ppm of a halogenated aromatic hydrocarbon bacteriostat.

4,494,483

CONTAINER FOR THE RECEIVING AND DISPENSING OF ANIMAL REARING AND FEEDING MATERIALS, PARTICULARLY FOR WATERING YOUNG ANIMALS

Frank Haiges, Bonnegheim, Fed. Rep. of Germany, assignor to Suevia Haiges GmbH & Co., Fed. Rep. of Germany

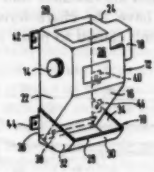
Filed Dec. 21, 1983, Ser. No. 563,699

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3248490

Int. Cl.³ A01K *7/00*

U.S. Cl. 119—77 **11 Claims**

1. A container for receiving and dispensing animal rearing and feeding materials, particularly for the watering of young animals, comprising a watering basin, a vertical shaft which forms an effective rear wall of said basin, and a supply container for the materials, arranged above said shaft, said container being provided with an opening which can be sealed so as to be both water and air tight, and said container communicating with the basin by means of the shaft, wherein said effective rear wall of the basin provided by said shaft has at least one hole to permit liquid material to pass from the shaft into the basin, the container opening being arranged at a side wall of the supply container, said single hole being arranged off-



center in the shaft on the same side of the supply container, as said container opening and the supply container being provided with a hinge mount or pin arranged on its back side.

4,494,484

HEAT EXCHANGER FOR A PROCESS GAS

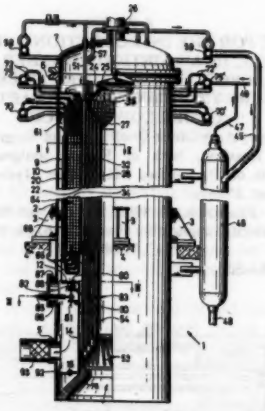
Wolfgang Ruzek, Neftenbach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,563

Claims priority, application Switzerland, Nov. 24, 1982, 6846/82

Int. Cl.³ F22B *1/02*

U.S. Cl. 122—34 **20 Claims**



1. A heat exchanger comprising

a cylindrical pressure vessel;

a duct section within said pressure vessel for conveying a hot gas therethrough;

a pair of parallel branch ducts extending from said duct section to convey parallel flows of the hot gas therethrough;

a mixing chamber communicating with said branch ducts to receive and mix parallel flows of hot gas therefrom;

an evaporator heating surface in said duct section for conveying a working medium therethrough in heat exchange relation with the hot gas in said duct section;

a second heating surface in one of said branch ducts and connected to said evaporator heating surface for conveying the working medium therethrough in heat exchange relation with the hot gas in said one branch duct;

a third heating surface in the other of said branch ducts for conveying a working medium therethrough in heat exchange relation with the hot gas in said other branch duct; and

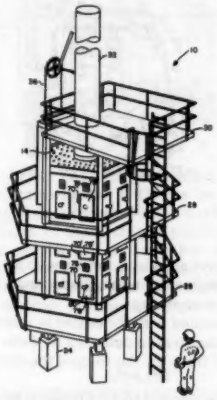
an adjustable throttle member in at least one of said branch ducts for throttling a flow of hot gas therethrough.

4,494,485

FIRED HEATER

Robert M. Kendall, Sunnyvale, and Richard J. Schreiber, Mountain View, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Nov. 22, 1983, Ser. No. 554,438
Int. Cl.³ F22B 21/00
U.S. Cl. 122—250 R 15 Claims



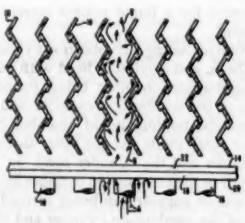
1. A fired heater comprising a vertical setting of a roof, a floor and a cylindrical sidewall which define a chamber, radiant burner means mounted in the sidewall for flamelessly combusting pre-mixed fuel and air with the burner means oriented to direct radiant heat inwardly of the chamber, at least one coil of tubes for containing fluid which is to be heated, the coils being mounted with tube runs which extend vertically within the chamber with portions of the tube forming a radiant section spaced inwardly from the burner means for absorbing radiant heat therefrom, said tube runs in the radiant section being circumferentially spaced apart to define channels for radial inward flow across the tubes of products of combustion from the burner means, and exhaust means for directing the products of combustion in an exhaust stream from the chamber.

4,494,486

SANDWICH NIPPLE PLATE FOR A STEAM GENERATOR DRYER

Oliver J. Mendler, Munhall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1983, Ser. No. 535,506
Int. Cl.³ F16T 1/00; F22B 37/26
U.S. Cl. 122—491 5 Claims



1. A moisture separator comprising a plurality of chevron-shaped plates forming a sinuous flow path for moisture laden fluid flowing therebetween;

a first plate disposed generally normal to said chevron plates;

said first plate having a plurality of holes disposed therein;

tubular nipples disposed in said holes;

said tubular nipples having one end upset and the other end extending away from the surface of said first plate;

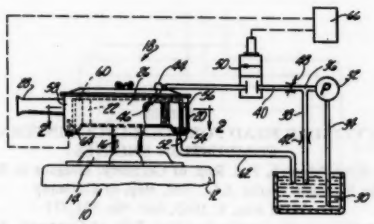
a second plate having apertures which register with openings in said tubular nipples, said second plate being proximate said first plate and fastened thereto in such a manner that the upset ends of said tubular nipples are clamped between said first and second plates and said tubular nipples extend toward the influent fluid flowing to said moisture separator.

4,494,487

ENGINE EFFICIENCY UNIT

John Nixon, 11795 E. Grand River, Brighton, Mich. 48116

Filed Sep. 24, 1979, Ser. No. 78,149
Int. Cl.³ F02M 25/00
U.S. Cl. 123—1 A 10 Claims



1. For use in conjunction with an internal combustion engine having an air intake means for inducting an air flow into the engine, a fuel source and fuel mixing means for forming a combustible charge from fuel from the fuel source with the inducted air flow for the engine, a device for improving the efficiency of the engine comprising:

a source consisting of liquid petroleum distillates, said source of distillates being separate from said fuel source, said distillates having the general formula of C_nH_{2n+2}, and

means separate from said fuel mixing means for continuously feeding the petroleum distillate from said source into said inducted air flow during operation of the engine.

4,494,488

FUEL CHARGING SYSTEM FOR HIGH PERFORMANCE VEHICLES

William M. Wheatley, Columbia, S.C., assignor to Ram Automotive Company, Canton, Ohio

Filed May 23, 1984, Ser. No. 613,219
Int. Cl.³ F02B 75/12
U.S. Cl. 123—1 A 13 Claims

1. A fuel charging system for the engine of a high performance vehicle including:

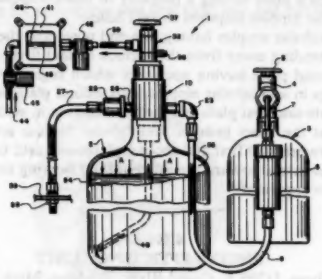
(a) a first container for holding a supply of pressurized liquid nitrous oxide;

(b) a second container for holding a supply of pressurized nitrogen gas, said nitrogen gas being under a greater pressure than the nitrous oxide;

(c) first conduit means for delivering nitrous oxide from the first container to the vehicle engine;

(d) second conduit means for delivering pressurized nitrogen gas from the second container into the first container to form a pressurized blanket of nitrogen gas against the liquid nitrous oxide for discharging the nitrous oxide from said first container and into the vehicle engine through the first conduit means; and

(e) valve means for directing the flow of pressurized nitrogen gas into the first container to form the pressurized



blanket of nitrogen gas and for permitting the flow of nitrous oxide from said container and into the first conduit means.

4,494,489

CYLINDER HEAD FOR FOUR-CYCLE INTERNAL COMBUSTION ENGINES

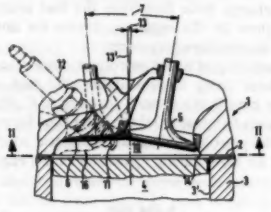
Jiri Seidl, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,371

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229723

Int. Cl.³ F01L *1/00*

U.S. Cl. 123—41.31 **15 Claims**



1. A cylinder head for an externally controlled four-cycle internal combustion engine, comprising space means for combustion constructed as a substantially concave flat recess means, one inlet valve and one exhaust valve for the space means whose valve stems are arranged in generally parallel cross planes, the valve stems forming an angle of about 10° to about 20° in a projection perpendicular to the cross planes, and a spark plug whose spark gap is arranged generally in a cross plane of the inlet valve, in the inflow direction of the charge into the space means and generally in the projection of the exhaust valve stem,

projection of an angle between the inlet valve stem and a coordinated cylinder axis is larger by about 2° to about 10° than a corresponding angle of the coordinated axis with the exhaust valve stem,

a relatively high area of the recess means contains the exhaust valve and the spark gap, and

a gradually tapering area of the recess means contains the inlet valve and falls off to a separating plane between the cylinder head and cylinder.

4,494,490

CYLINDER COVER

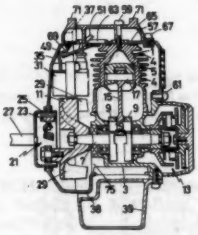
Katsumi Kiyooka, Warabi; Atsushi Harada, Kokubunji, and Kiyoshi Anbo, Hiratsuka, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,570

Claims priority, application Japan, Mar. 31, 1982, 57-044739[U]

Int. Cl.³ F01P *1/00*

U.S. Cl. 123—41.56 **5 Claims**



1. Cylinder cover apparatus for use with an air-cooled internal combustion engine having a cylinder and a fan, the cylinder cover apparatus comprising:

a fan cover mounted with the engine in spaced apart relation to the cylinder so as to define an air flow passage guiding a flow of air from the fan to cool the exterior wall of the cylinder;

said fan cover at one end thereof defining an opening leading to said cylinder exterior wall from outside the fan cover, so that an accumulation of dirt on the cylinder exterior wall can be removed by access through said opening, and

a cover member detachably secured to the engine to block said opening and thereby prevent the air flow from escaping therethrough in normal operation of the engine,

so that the cover member can be removed for access to said cylinder external wall whenever cleaning is desired wherein said cover member has an air guide section extending through said opening and engaging said air flow for guiding the air flow generated by the fan to the outer side surface of said cylinder.

4,494,491

LIQUID-COOLED INTERNAL COMBUSTION ENGINE

Toshiyuki Takada, and Shinichi Tamba, both of Hyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

PCT No. PCT/JP79/00118, § 371 Date Jan. 12, 1980, § 102(e) Date Dec. 26, 1979

Continuation of Ser. No. 186,028, Jan. 12, 1980, abandoned

PCT Filed May 10, 1979, Ser. No. 382,445

Claims priority, application Japan, May 12, 1978, 53-63677

Int. Cl.³ F02F *11/00*; F16J *15/02*

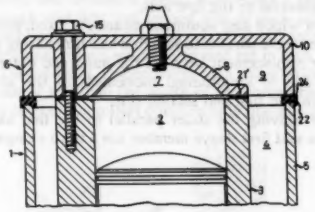
U.S. Cl. 123—41.72 **2 Claims**

1. Sealing system for a liquid cooled internal combustion engine, comprising

an engine section including a combustion cylinder with inner and outer shells, and a cylinder head with inner and outer shells, a combustion chamber being formed inside the inner shells of the combustion cylinder and the cylinder head, an annular cooling liquid chamber being formed between the outer shells and the inner shells of the combustion cylinder and the cylinder head, an upper end of the inner shell of the combustion cylinder having an annular recess, and an annular gap being formed between the outer shell of the combustion cylinder and the outer shell of the cylinder head when the inner shell of the cylinder head abuts against the inner shell of the combustion cylinder,

a metallic sealing member to be disposed in the annular recess of the inner shell of the combustion cylinder, said metallic sealing member being thicker than the annular recess so that the metallic sealing member directly abuts against the inner shell of the cylinder head to form a seal therewith, and

a resilient sealing member positioned between the outer shell of the combustion cylinder and the outer shell of the



cylinder head, said resilient sealing member having a U-shaped cross-section with ribs on the botton thereof extending in the opposite direction relative to the projecting direction of the U-shaped portion and being thicker than the annular gap so that when the cylinder head is firmly attached to the combustion cylinder, the metallic sealing member seals the inner shells and the resilient sealing member deforms and seals the outer shells completely.

4,494,492

LIQUID-COOLED POWER AGGREGATE OR ENGINE HAVING AN ARRANGEMENT FOR SUPPRESSING VIBRATION

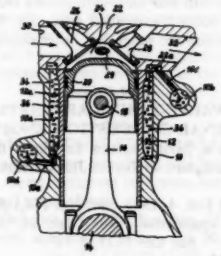
Hans-Alfred Kochanowski, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Apr. 5, 1983, Ser. No. 482,361

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304587

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—41.84 **8 Claims**



1. In a mechanism which includes: a casing having at least one internal wall which, during operation of said mechanism, is thermally stressed and subjected to vibration, and an outer wall spaced from said inner wall; and means defining a space between said inner wall and said outer wall of said casing, said space being part of a liquid cooling system of said mechanism and said liquid cooling system being adapted to cause a liquid coolant to be circulated through said space to cool said casing and said inner wall thereof; the improvement comprising easily compressible means provided in said space for suppressing, during operation of said mechanism and by virtue of its inherent compressibility, a transfer of vibrations produced during operation of said mechanism in said inner wall from said inner wall through said liquid coolant to said outer wall, said compressible means including a layer of a closed-pore, compressible foam material in said space which is supported on an internal surface of one of said inner and outer walls.

4,494,493

INTAKE SYSTEM FOR AN AUTOMOTIVE ENGINE

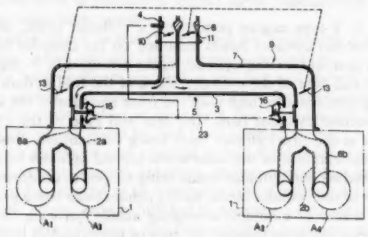
Kouji Morikawa, Narita Higashi, and Hitoshi Suzuki, Niiza, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,168

Claims priority, application Japan, May 12, 1983, 58-83182

Int. Cl.³ F02B *29/02, 31/00*

U.S. Cl. 123—52 M **5 Claims**



1. An intake system for an automotive engine having cylinders comprising:

primary intake ports communicated with said cylinders;

secondary intake ports communicated with said cylinders;

each of said primary and secondary intake ports being communicated with a corresponding cylinder at a common intake valve;

each primary intake port being disposed in a tangential direction so as to provide a swirl of inducted mixture, and sectional area of each primary intake port being reduced;

a primary intake manifold communicated with said primary intake ports;

a secondary intake manifold communicated with said secondary intake ports;

a primary carburetor having a throttle valve provided in said primary intake manifold;

a secondary carburetor having a throttle valve provided in said secondary intake manifold;

said throttle valve of the secondary carburetor being so arranged to be opened after the throttle valve of the primary carburetor has been fully opened;

a first valve provided in each branch of said secondary intake manifold for preventing a counter flow of inducted mixture;

said first valve being operatively connected to said throttle valve of the secondary carburetor so as to be opened together with the throttle valve;

a bypass provided at a position downstream of said first valve for communicating the primary intake manifold with the adjacent secondary intake manifold; and

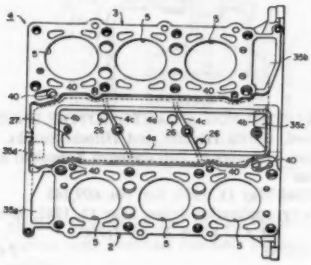
a second valve provided to close said bypass and arranged to be operated to open said bypass when load on the engine exceeds a predetermined partial load.

4,494,494

V-TYPE ENGINE

Tetsuji Yahiro, Higashihiroshima, and Haruyoshi Ishimi, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Japan

Filed Apr. 18, 1984, Ser. No. 601,728
Claims priority, application Japan, Apr. 18, 1983, 58-68789
Int. Cl.³ F02B 75/22
U.S. Cl. 123—55 VS **7 Claims**



1. A V-type engine comprising a cylinder block, and first and second cylinder heads mounted on the cylinder block to form first and second cylinder banks arranged in V-shape, the front end face of the cylinder block at the first cylinder bank being substantially flush with the front end face of the same at the second cylinder bank, the rear end face of the cylinder block at the first cylinder bank being substantially flush with the rear end face of the same at the second cylinder bank, said first and second cylinder heads being shaped to conform to the shape of the cylinder block, each cylinder bank being provided with a row of cylinders extending axially between the front and rear end faces thereof, the row of the cylinders in the first cylinder bank starting from a location spaced apart from the front end face and terminating at a location near the rear end face and the row of the cylinders in the second cylinder bank starting from a location near the front end face and terminating at a location spaced apart from the rear end face so that the row of the cylinders in the first cylinder bank is axially rearwardly displaced from that in the second cylinder bank,

characterized in that at least one oil-return passage communicating with a space defined by the corresponding cylinder head is formed in the cylinder block at, at least, one of the locations between the front end face of the cylinder block and the foremost cylinder in the first cylinder bank and between the rear end face of the cylinder block and the rearmost cylinder in the second cylinder bank.

4,494,495

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL COMBUSTION ENGINE

Norihiko Nakamura, Mishima; Toyokazu Baika, Susono; Toshio Miki, Yao, and Minoru Kohigashi, Chiryu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Koyo Seiko Kabushiki Kaisha, Osaki, both of, Japan

Filed Oct. 15, 1982, Ser. No. 434,711
Claims priority, application Japan, Jan. 12, 1982, 57-002231
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.15 **7 Claims**

1. An apparatus for controlling relative angular relation between two interconnected bodies which are rotatable about a common first axis, the apparatus comprising:

an outer sleeve member fixedly connected to one of the bodies coaxial with said first axis;

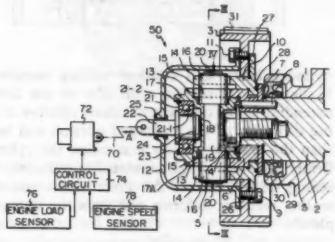
an inner sleeve member fixedly connected to the other of the bodies coaxial with said first axis, said inner sleeve member being inserted into said outer sleeve member, said outer sleeve member having a first elongated slit and said inner sleeve member having a second elongated slit overlapping the first slit in the outer sleeve member, the overlapping first and second slits being skewed with respect to each other;

abutment means disposed in each of said first and second slits, said abutment means comprising first and second rollers arranged in said first and second slits, respectively, so that each roller is in contact with the corresponding slit and means for mounting each of said first and second rollers for free and independent rotation about a second axis transverse to the first axis;

a slider on which said abutment means are fixed, said slider being movable parallel to said first axis for causing relative angular displacement between the inner and outer sleeve means due to longitudinal movement of the abutment means in said first and second slits;

means for moving the slider parallel to the first axis; and

wherein said first sleeve member has a third elongated slit



circumferentially spaced from said first slit; said second sleeve member has a fourth elongated slit circumferentially spaced from said second slit; and said abutment means includes third and fourth rollers arranged in said third and and fourth slits, respectively, so that each roller is in contact with the corresponding slit, and means for mounting each of said third and fourth rollers for free and independent rotation about at third axis transverse to the first axis and making a fixed angle with the second axis, said slits being angularly offset with respect to said abutment means such that the first and third rollers always contact the respective first and third slits on one side only of the angle between the second and third axes and the second and fourth rollers always contact the respective second and fourth slits on the other side only of the angle between the second and third axes, thereby eliminating backlash between the inner and outer sleeves.

4,494,496

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL-COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Toyokazu Baika, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 4, 1983, Ser. No. 464,105
Claims priority, application Japan, Mar. 24, 1982, 57-45536
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.15 **8 Claims**

1. An apparatus for controlling the relative angular relationship between two rotating bodies interconnected with each other so as to have a common first axis of rotation, said apparatus comprising:

a first inner sleeve member which is fixedly connected to one of said bodies coaxially with said first axis;

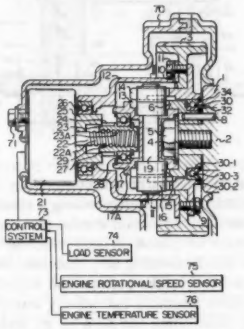
a second outer sleeve member which is fixedly connected to the other of said bodies coaxially around said first sleeve member;

means arranged between said first and second sleeve member for allowing relative rotation therebetween without much friction;

said first and second sleeve members having two circumfer-

entially spaced sets of elongated first and second slits, the first slit of each set being located in the first sleeve, the second slit of each set being located in the second sleeve adjacent to the corresponding first slit in the first sleeve, the adjacent slits being skewed with respect to each other, and at least one slit in each set being skewed with respect to the first axis;

abutment means arranged in the adjacent slits of the two sets of slits, said abutment means comprising a pin extending through said first and second slits of each set and transversely intersecting the first axis, first and second annular cylindrical rollers arranged on said pin in each of said first and second slits, respectively, each roller having an outer diameter less than the width of the corresponding slit so that each of the rollers contacts only one side of the corresponding one of the slits, and means for allowing free and independent rotation of each of the rollers about the pin;



a slider on which the abutment means are mounted, said slider being movable along and rotatable about the first axis; and

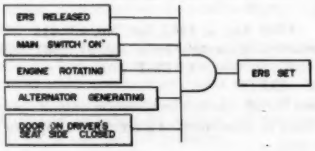
means for moving the slider along said first axis relative to said first and second sleeve members for generating a relative angular displacement between said first and second sleeve member in response to movement of the abutment means parallel to the first axis, wherein the two first slits are angularly offset with respect to the pin so that said first slits bear against the corresponding first rollers on one side of the pin, and the two second slits are angularly offset with respect to the pin so that said two second slits bear against the corresponding second rollers on a side of said pin opposite to said one side of the pin.

4,494,497

AUTOMATIC ENGINE STOP-RESTART SYSTEM

Shigekatsu Uchida; Takao Akatsuka, and Takahide Kawamura, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 14, 1982, Ser. No. 387,819
Claims priority, application Japan, Jul. 20, 1981, 56-113151
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—179 B **4 Claims**



1. A system for automatically stopping and restarting a motor vehicle engine having an alternator that is coupled to said engine in response to predetermined conditions comprising:

stopping means coupled to said engine for stopping said engine;

starting means coupled to said engine for restarting said engine;

engine rotational speed sensor means coupled to said engine for detecting an engine's rotational speed to generate a speed signal corresponding to said engine's rotational speed;

alternator output level sensor means coupled to said alternator for detecting an output level of said alternator to generate an alternator signal corresponding to said output level;

a first judging means coupled to said engine's rotational speed sensor means for judging as to whether said speed signal indicates said engine's rotational speed exceeding a predetermined level to produce a first signal indicative of said engine being rotating;

a second judging means coupled to said alternator output level sensor means for judging as to whether said alternator signal indicates the output level exceeding a predetermined level to produce a second signal indicative of said alternator being generating;

switching means manually operated for producing a third signal while said switching means is turning on;

a third judging means coupled to said first and second judging means and said switching means for producing an enable signal when at least said first, second and third signals are received by said third judging means;

a fourth judging means coupled to said third judging means and various sensors detecting engine operational conditions for judging as to whether a first condition for automatic engine stop is fulfilled to produce a first activating signal when fulfilled, said first condition including at least a presence of said enable signal, and said stopping means being energized by said first activating signal; and

a fifth judging means coupled to said third judging means and said various sensors for judging as to whether a second condition for automatic engine restart is fulfilled to produce a second activating signal when fulfilled, said second condition including the presence of said enable signal, and said starting means being energized by said second activating signal.

4,494,498

AIR-FUEL RATIO CONTROL SYSTEM FOR ENGINE STARTING

Tomoo Ito; Hiroshi Kamifuji, both of Katsuta; Haruhiko Kobayashi, Ibaraki, and Tomiya Itakura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Jan. 5, 1983, Ser. No. 455,804
Claims priority, application Japan, Jan. 6, 1982, 57-168[U]
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 G **4 Claims**

1. An air-fuel ratio control system used in engine starting, comprising:

a fuel passage through which a fuel is supplied from a fuel reservoir to a space of an air-fuel mixture passage downstream from a throttle valve disposed in said air-fuel mixture passage;

fuel metering valve means including a metering valve which is disposed within said fuel passage and adapted to meter the fuel to be supplied to said space of the air-fuel mixture passage;

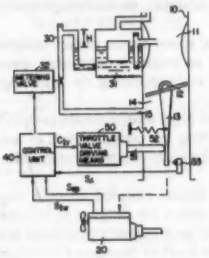
valve driving means for driving said throttle valve to vary an opening degree thereof;

temperature sensing means for sensing a temperature of an engine cooling water;

speed sensing means for sensing an engine speed; and

electronic control unit means for receiving data from said

sensing means and delivering control signals to said fuel metering valve means and said valve driving means for driving and controlling said fuel metering valve means and said valve driving means such that said throttle valve



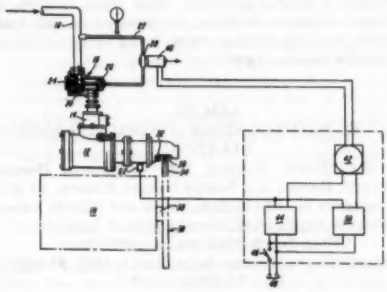
is held in a constant predetermined opening degree by means of said valve driving means during engine warm-up while the opening degree of said metering valve is varied by said control unit means in dependence upon the change in the temperature of the engine cooling water.

4,494,499

SYSTEM AND APPARATUS PROVIDING A TWO STEP STARTING CYCLE FOR DIESEL ENGINES USING A PNEUMATIC STARTER

Robert A. Stein, Dayton, Ohio, assignor to Tech Development Inc., Dayton, Ohio

Filed May 9, 1983, Ser. No. 492,940
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 F **12 Claims**



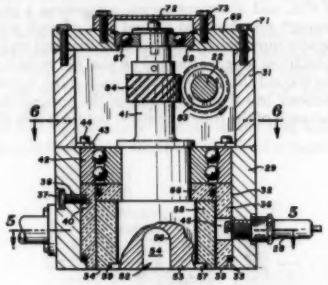
1. A system for starting a diesel engine which includes a crankshaft for drive thereof comprising means to apply power to crank the crankshaft of said engine up to a speed which is required to start the engine, means for sensing the speed of rotation of said crankshaft as it rises toward that level of speed which is required for starting said engine and transmitting signals thereof, means receiving said signals operative to responsively control the amount of power applied to drive said crankshaft to prevent the speed of its rotation from exceeding a predetermined limit which is less than that required to start said engine and means to override said control means after a predetermined degree of rotation of said crankshaft, thereby to allow its speed to rise to the level required to produce a starting of the engine.

4,494,500

ROTARY VALVE ASSEMBLY

Craig N. Hansen, Minnetonka, Minn., assignor to Hansen Engine Corporation, Minnetonka, Minn.

Filed Jun. 1, 1982, Ser. No. 383,511
Int. Cl.³ F01L *7/16*
U.S. Cl. 123—190 E **29 Claims**



1. An internal combustion engine comprising: a block having at least one cylindrical wall surrounding a combustion chamber, piston means located in said combustion chamber, operable to reciprocate to piston in said chamber, head means mounted on the block covering said chamber, said head means having an air and fuel intake passage and an exhaust gas passage, a rotary valve assembly operatively associated with the head means for controlling the flow of air and fuel into the chamber and the flow of exhaust gas from the chamber, said head means having a housing with a bore open to the chamber accommodating said valve assembly, said valve assembly comprising a cylindrical sleeve located in said bore, said sleeve having an inner surface, and ignition hole, and intake and exhaust ports aligned with said intake passage and exhaust gas passage, spark generating means mounted on the housing means operable to generate a spark in said hole, rotatable valving means located within said sleeve for controlling the flow of air and fuel into said chamber and the flow of exhaust gases out of the chamber, said rotatable valving means having a valving passage open to the chamber and the inner surface of the sleeve, said rotatable valving means including means having limited lateral movement to maintain a sealing relationship with said inner surface of the sleeve to close said intake and exhaust ports, said means having limited lateral movement is a body having an outer surface engageable with the inner surface of the sleeve, and said body having the valving passage, a drive shaft for rotating said body, and a universal coupling connecting the shaft with the body whereby the body rotates about an axis offset from the axis of the shaft and means operable to rotate said rotatable valving means in timed relation with the movement of the piston means whereby said engine has intake, compression, power, and exhaust strokes.

4,494,501

PISTONS WITH COMBUSTION BOWL INSERTS

Bruni Ludovico, Turin, Italy, assignor to AE PLC, Rugby, England

Filed Aug. 2, 1982, Ser. No. 404,416
Claims priority, application Italy, Jul. 31, 1981, 68088 A/81
Int. Cl.³ F01P *1/04*
U.S. Cl. 123—193 CP **4 Claims**

1. A piston for an internal combustion engine comprising:

a piston body of aluminium or aluminium alloy and having a crown end,

a generally cylindrical bore formed in the piston body and extending in an axial direction from the crown end, the generally cylindrical bore having a reduced diameter

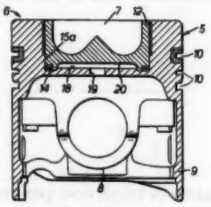
section remote from said crown end and an increased diameter section adjacent said crown end,

a base formed in the piston body at an innermost end of said generally cylindrical bore,

an insert of a ferrous material and having a base,

a combustion bowl formed in the insert,

said insert having a generally cylindrical outer surface with a uniform diameter which forms an interference fit in the reduced diameter section of the generally cylindrical bore to connect the insert to the piston body,



a sealing groove between said generally cylindrical outer surface of said insert and said reduced diameter section of said generally cylindrical bore,

a gap between said generally cylindrical outer surface of said insert and said increased diamcter section of said generally cylindrical bore, said gap opening onto said crown end to provide a heat-insulating barrier, and

a depression formed in the base of the insert and defining, with the base of the generally cylindrical bore, an insulating air gap therebetween, whereby the transfer of heat from the combustion bowl to the piston body is reduced.

4,494,502

IDLING CONTROLLER OF VARIABLE DISPLACEMENT ENGINE

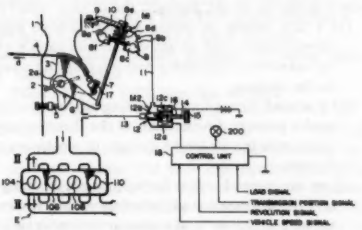
Norio Endo; Yoshiaki Danno; Tatsuro Nakagami, and Nobuaki Murakami, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,782

Claims priority, application Japan, Jan. 27, 1982, 57-12447; Nov. 16, 1982, 57-200908; Dec. 14, 1982, 57-218907

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **10 Claims**



1. An idling controller for a variable displacement engine comprising:

a plurality of cylinders of a multi-cylinder engine into each of which a fuel-air mixture is supplied through a common manifold and a common air intake passage,

cylinder operation stopping means to stop the operation of part of said cylinders by cutting off the supply of the intake air to said part of cylinders,

cylinder number controlling means to control the number of operating cylinders during idlying by supplying such control signals to said cylinder operation stopping means as switching the engine operation between an all-cylinder idling mode wherein all cylinders operate and a partial-cylinder idling mode wherein said part of cylinders operate while the other(s) remain inoperative,

air flow-rate adjusting means which is provided in said common air intake passage in order to adjust the flow-rate of intake air passing through said common air intake passage, and

air flow-rate controlling means to increase or decrease the quantity of the intake air according to the number of the cylinders in operation during idling by controlling said air flow-rate adjusting means so that the quantity of the intake air passing through said common air intake passage during said partial cylinder idling mode is less than that during all-cylinder idling mode, in conformity with the action of said cylinder number controlling means.

4,494,503

VARIABLE DISPLACEMENT ENGINE

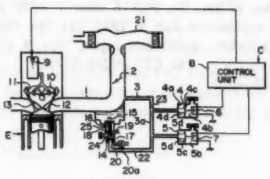
Yoshiaki Danno, and Nobuaki Murakami, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,807

Claims priority, application Japan, Jan. 22, 1982, 57-9079

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **10 Claims**



1. A multicylinder variable displacement engine, comprising:

a throttle valve provided in an intake passage which supplies feed air to the combustion chamber of each cylinder of a multi-cylinder engine;

a pressure detecting means for detecting the pressure in said intake passage at a point downstream of said throttle valve;

cylinder number controlling means for controlling the number of operating cylinders by stopping the operation of part of cylinders by cutting off the supply of the feed air to said part of cylinders;

control means which, upon receiving the detection signal from said pressure detecting means, gives a signal for a full displacement mode with all cylinders in operation to said cylinder number controlling means when the detected pressure in the intake passage at said point downstream of said throttle valve is above a first preset pressure and on the other hand gives a signal for a partial displacement mode with part of cylinders in operation and the remaining cylinders out of operation to said cylinder number controlling means when the detected pressure in the intake passage at said point downstream of said throttle valve is below a second preset pressure which is lower than said first preset pressure;

control pressure feed means connected to said pressure detecting means and supplying thereto a control pressure greater than said first preset pressure preferentially to the pressure in the intake passage in order to make said control means give said signal for a full displacement mode;

control pressure switch means for detecting the temperature of the engine and turning on and off said control pressure feed means in response to detected levels of the engine temperature;

said first preset pressure being set to an almost constant

pressure generated at said point downstream of the throttle valve in the intake passage over a wide range of the rotational speed of the engine before the engine mode is changed from said partial displacement mode to said full displacement mode by means of said cylinder number controlling means in such a manner that the engine output in said partial displacement mode is substantially equal to the engine output in said full displacement mode at a same throttle valve opening, and on the other hand, said second preset pressure being set to another almost constant pressure generated at said point downstream of the throttle valve in the intake passage over a wide range of the rotational speed of the engine after said change of the engine operation mode from the partial displacement one to the full displacement one is completed; and further

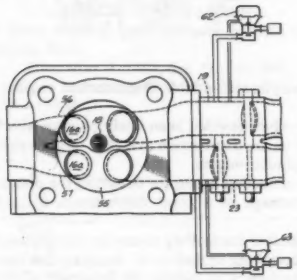
said control pressure feed means being constructed so as to supply said control pressure to said pressure detecting means when said control pressure switch means detects the temperature of the engine is lower than a predetermined value, resulting in that said control means gives said signal for a full displacement mode to said cylinder number controlling means.

4,494,504

STRATIFIED BURN INTERNAL COMBUSTION ENGINE

Shizuo Yagi; Junji Otani; Isao Fujii, and Hiroshi Kogure, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 91,874, Nov. 7, 1979, abandoned. This application Jun. 9, 1982, Ser. No. 386,611
Claims priority, application Japan, Nov. 9, 1978, 53-137274
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—308 **18 Claims**



1. In an internal combustion piston engine, the improvement comprising, in combination: walls forming a combustion chamber having first and second intake valve ports and at least one exhaust valve port, a first intake valve for controlling flow through the first intake valve port, a second intake valve for controlling flow through the second intake valve port, an exhaust valve for controlling flow through the exhaust valve port, a spark plug communicating with said combustion chamber, means including a first intake passage for supplying a relatively rich air-fuel mixture to said first intake valve port, means including a second intake passage for supplying a relatively lean air-fuel mixture to said second intake valve port, a first throttle valve in said first intake passage, a second throttle valve in said second intake passge, a first and a second air valve that operate at a minus load of said engine and which introduce by said first air valve a relatively small amount of air into said first intake passage and by said second air valve a relatively large amount of air into said second intake passage, means for controlling operation of said first and second throttle valves so that during an intake stroke of the engine the air weight introduced into the combustion chamber through the first intake valve port is less than the air weight introduced into the combustion chamber through the second intake valve port, and so that the following relationship exists at least in the range of low loads of the engine:

$$A_{TH1}/A_{V1} < A_{TH2}/A_{V2}$$

where

A_{TH1}: effective opening area of said first throttle valve at each load.

A_{TH2}: effective opening area of said second throttle valve at each load.

A_{V1}: effective sectional area of said first intake valve port.

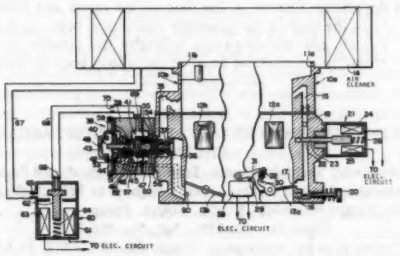
A_{V2}: effective sectional area of said second intake valve port.

4,494,505

DECELERATION CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaru Naramura, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 10, 1982, Ser. No. 440,534
Claims priority, application Japan, Jan. 7, 1982, 57-621
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—325 **7 Claims**



1. A deceleration control device for an internal combustion engine having an air intake passage and a throttle valve disposed in the air intake passage, the device comprising:

(a) a first means including a first passage bypassing said throttle valve and an associated fuel supply cut-off valve for selectively admitting and interrupting a supply of fuel to the engine;

(b) a second means for conducting air to a portion of the air intake passage downstream of the throttle valve to dilute vacuum in the air intake passage downstream of the throttle valve;

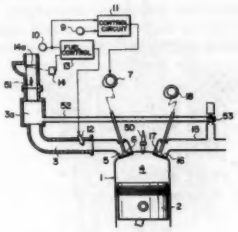
(c) an air control valve for selectively opening or closing said second means and including means, responsive to the vacuum in the air intake passage downstream of the throttle valve exceeding a predetermined level, for operating the air control valve to open the second means and responsive to said vacuum in the air intake passage downstream of the throttle valve decreasing to said predetermined level to operate the air control valve to block the second bypass means; and

(d) a third means for closing said air control valve to suspend the conduction of air by said second means when the fuel supply cut-off valve recommences admitting said fuel supply after interrupting same, said third means including means for supplying air to said air control valve operating means.

4,494,506
INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Nobuhiro Hayama; Masasige Kinjyo; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 1, 1983, Ser. No. 463,044
Claims priority, application Japan, Feb. 3, 1982, 57-16556; Feb. 3, 1982, 57-16557; Feb. 3, 1982, 57-16558; Feb. 3, 1982, 57-16559; Apr. 26, 1982, 57-70027; Apr. 27, 1982, 57-70968
Int. Cl.³ F02D *13/02*
U.S. Cl. 123—348 9 Claims



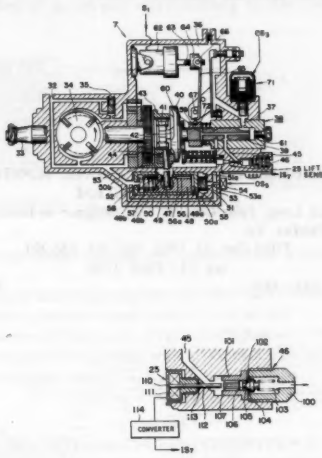
1. An internal combustion engine comprising:
combustion chamber means in which intake and compression strokes are carried out, an intake system having intake passage means for providing a supply of intake gas to said combustion chamber means, charge control means for returning a controlled amount of the intake gas in the combustion chamber means to said intake passage means in the compression stroke to thereby control effective charge to the combustion chamber means, detecting means for detecting at least one factor which is related to engine speed and producing an engine speed signal, manually operated reference setting means for determining a reference speed value, and engine output restricting means for comparing the engine speed signal with said reference value and for providing a signal for restricting engine output when said engine speed signal is greater than said reference value.

4,494,507
CONTROL SYSTEM FOR A FUEL INJECTION INTERNAL COMBUSTION ENGINE INCLUDING A FUEL INJECTION RATE DETECTOR

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed May 18, 1983, Ser. No. 495,662
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—357 1 Claim

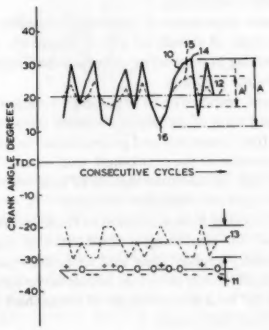
1. A control system for an internal combustion engine having a fuel injection nozzle, the fuel injection nozzle being connected via a fuel line to a fuel injection pump so that fuel forced out of the fuel injection pump is conducted via the fuel line to the fuel injection nozzle and is then injected into the engine via the fuel injection nozzle, the control system comprising:
(a) a valve member movably disposed in the fuel line for allowing the fuel to pass to the fuel injection nozzle when the valve member is displaced from a closed position, whereby displacement of the valve member represents the rate of fuel injection into the engine;
(b) means responsive to displacement of the valve member for sensing the rate of fuel injection into the engine and generating a signal indicative thereof;
(c) means for sensing an operating condition of the engine and generating a signal indicative thereof;
(d) means responsive to the engine operating condition signal for generating a signal indicative of a desired rate of fuel injection into the engine which varies as a function of the sensed engine operating condition; and
(e) means responsive to the sensed fuel injection rate signal and the desired fuel injection rate signal for controlling the actual fuel injection rate on the basis of the difference between the sensed fuel injection rate and the desired fuel injection rate.



4,494,508
IGNITION SYSTEM

Thomas T. Ma, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 14, 1983, Ser. No. 541,824
Claims priority, application United Kingdom, Dec. 22, 1982, 8236485
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—406 14 Claims



1. An ignition system for an internal combustion engine including measuring means for measuring a parameter of the combustion charge in a cylinder of the engine prior to ignition in order to predict the burning characteristics of that charge so as to be able to vary the timing of the spark for igniting that charge in the same cycle in dependence upon the measured parameter in such a sense as to reduce cycle to cycle variations in the engine output torque, wherein said measuring means

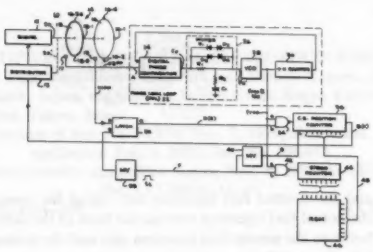
includes an anemometer within a cylinder combustion chamber of the engine to measure the charge velocity for use in perturbing the spark timing to advance or retard the timing in dependence upon the measured velocity.

4,494,509

HIGH RESOLUTION ELECTRONIC IGNITION CONTROL SYSTEM

Alexander Long, Falls Church, Va., assignor to Electromotive, Inc., Fairfax, Va.

Filed Oct. 22, 1982, Ser. No. 436,291
Int. Cl.³ F02P *5/08*
U.S. Cl. 123—416 **47 Claims**



1. An electronic ignition system for controlling as a function of a selected engine parameter the ignition instant of an internal combustion engine having at least one cylinder and a piston disposed therein and coupled to a rotatable crankshaft of the engine to define a first reference position with respect to the crankshaft, the ignition instant occurring upon the termination of an arc of crankshaft rotation at a second variable position with respect to said first reference position, the arc of crankshaft rotation being initiated at a third reference position fixedly disposed before said first reference position considering the rotational direction of the crankshaft, said electronic ignition system comprising:

(a) means responsive to crankshaft rotation for providing a first train of signals of a first frequency, each first signal occurring in time when the crankshaft rotates past its third reference position;

(b) means responsive to crankshaft rotation for providing a second train of signals of a second frequency greater than said first frequency and proportional to the speed of angular rotation of the crankshaft, said second frequency being such that consecutive signals of said second train define a first angle of crankshaft rotation;

(c) multiplying means coupled to receive said second train of signals for providing a third train of signals of a third frequency greater than said second frequency, said third frequency being such that consecutive signals of said third train define a second angle of crankshaft rotation smaller than said first angle;

(d) means coupled to receive said first and third trains of signals and actuated upon the occurrence of each signal of said first train for integrating said third train of signals to obtain an indication of the present crankshaft position with respect to said first reference position and said third reference position with a high degree of resolution corresponding to said second, relatively small angle; and

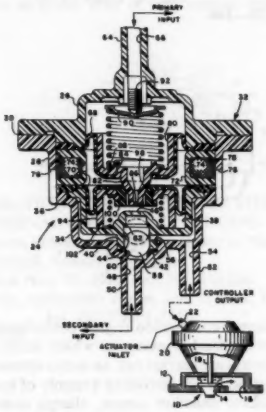
(e) means responsive to the selected parameter for setting said second variable position.

4,494,510

CONTROLLING EGR IN AN INTERNAL COMBUSTION ENGINE AND FLUID PRESSURE SIGNAL CONTROLLER THEREFOR

William W. Kelly, Battle Creek, and Cyril E. Bradshaw, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 20, 1982, Ser. No. 379,844
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **2 Claims**



1. A method of operating an internal combustion engine comprising the steps of:

(a) providing a valve for controlling recirculation of exhaust gas to the engine induction passage;

(b) sensing engine induction passage vacuum and inverting and modulating said vacuum;

(c) sensing ported throttle plate suction;

(d) comparing said inverted and modulated vacuum with said throttle plate suction and switching between said modulated vacuum and said throttle suction in response to said comparison for providing the lower level control signal; and,

(e) moving said valve in response to said control signal.

4,494,511

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Anjo; Yutaka Suzuki, Nishio, and Takashi Hasegawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 244,911, Mar. 18, 1981, abandoned, which is a continuation of Ser. No. 9,360, Feb. 5, 1979, abandoned. This application Dec. 22, 1982, Ser. No. 452,337
Claims priority, application Japan, Feb. 14, 1978, 53-16130; Mar. 9, 1978, 53-27077
Int. Cl.³ F02M *39/00*; F02D *1/04*
U.S. Cl. 123—463 **19 Claims**

1. In combination with an internal combustion engine having a plurality of cylinders, a throttle valve and an output shaft rotated by the combustions of air-fuel mixture supplied to said cylinders, a fuel injection system comprising:

a source of fuel;

means for pressurizing fuel from said source to provide pressurized fuel;

an electromagnetic valve having an inlet for receiving said pressurized fuel and an outlet for supplying fuel to said engine upstream of said throttle valve at a position where substantially atmospheric pressure is always present re-

gardless of the engine intake pressure at a position downstream of said throttle valve, said fuel being supplied to said engine whenever said valve is actuated;

a pressure regulator for regulating the pressure of said pressurized fuel to the inlet of said electromagnetic valve as a function of the engine intake pressure present at a position downstream of said throttle valve, said pressure regulator comprising:

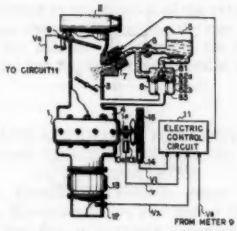
a vacuum chamber communicated with said position downstream of said throttle valve;

an atmosphere chamber communicated with the atmosphere;

a fuel chamber communicated with said pressurized fuel;

a first diaphragm separating said atmosphere chamber from said vacuum chamber;

a second diaphragm separating said atmosphere chamber from said fuel chamber, said second diaphragm being continuously linked with said first diaphragm so as to be moved therewith and having a pressure receiving area smaller than that of said first diaphragm;



a valve associated with said second diaphragm for controlling the return of pressurized fuel from said fuel chamber to said source of fuel to thereby regulate the pressure of said pressurized fuel; and

a spring disposed in said vacuum chamber for biasing said first diaphragm such that said valve moved by said first diaphragm through said second diaphragm is prevented from returning said pressurized fuel to said source of fuel; and

an electric control circuit for actuating said electromagnetic valve intermittently and synchronously with the suction strokes of said cylinders, each such actuation being for an interval of time proportional to either (a) $\sqrt{P_I}$ or (b) $\sqrt{Qa/N}$, where P_I is the engine intake pressure at a position downstream of the throttle valve, Qa is an amount of air taken into the engine and N is the rotational speed of the engine, whereby the pressurized fuel is metered by said electromagnetic valve.

4,494,512

METHOD OF CONTROLLING A FUEL SUPPLYING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Noriyuki Kishi, Tokyo, and Shumpei Hasagawa, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

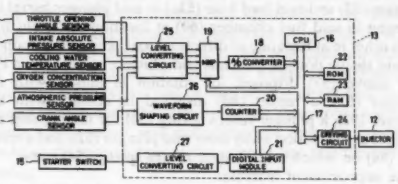
Filed Apr. 28, 1983, Ser. No. 489,676

Claims priority, application Japan, Jun. 23, 1982, 57-107972

Int. Cl.³ F02M *7/00*

U.S. Cl. 123—489 **4 Claims**

1. In a method of supplying fuel to an internal combustion engine provided with an oxygen concentration sensor at the exhaust system thereof, said oxygen concentration sensor being adapted to produce an oxygen concentration signal representative of the oxygen concentration in the exhaust gases flowing through the exhaust system, which method cyclically performs the steps of calculating an instantaneous fundamental fuel amount value in accordance with the engine speed and load, calculating an oxygen concentration correction coefficient in accordance with said oxygen concentration signal and at least two additional correction values in accordance with at least two engine parameters other than the oxygen concentration, modifying said fundamental fuel amount value by said oxygen concentration correction coefficient and said additional correction value so as to obtain fuel amount value, and supplying fuel of an amount corresponding to said final fuel



amount value to the engine, the improvement which comprises:

a first step of discriminating that said final fuel amount value exceeds a predetermined level at a cycle; and

a second step of fixing said oxygen concentration coefficient at a predetermined value without respect to said oxygen concentration signal.

4,494,513

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES, FREE FROM EROSION OF THE PUMP HOUSING

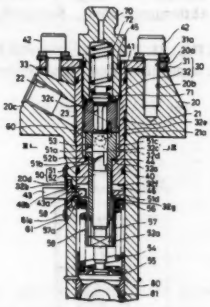
Keizi Torizuka, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,875

Claims priority, application Japan, Jul. 14, 1982, 57-106640[U]

Int. Cl.³ F02M *59/44*

U.S. Cl. 123—495 **9 Claims**



1. In a fuel injection pump having: a pump housing (**20**) having at least one pump accommodating space (**21**) formed therein; a pump element (**50**) mounted in said pump accommodating space (**21**) of said pump housing (**20**), said pump element (**50**) including a plunger barrel (**51**) having a peripheral wall thereof formed with a feed hole (**51***a*) and an outer peripheral surface thereof formed with an annular stepped shoulder (**51***b*), and a plunger (**52**) slidably fitted in said plunger barrel (**51**), said plunger barrel (**51**) and said plunger (**52**) cooperating to define a delivery chamber (**53**) therebetween in which said feed hole (**51***a*) opens; an element holder (**30**) holding said pump element (**50**) in place within said pump accommodating space (**21**) of said pump housing (**20**), said element holder (**30**) including a sleeve portion (**32**) having a substantially hollow cylindrical configuration, said sleeve portion (**32**) being fitted in said pump accommodating space (**21**) of said pump housing (**20**)

and axially extending, said sleeve portion (32) having an inner peripheral surface thereof formed with an annular stepped shoulder (32*a*) fitted in said annular stepped shoulder (51*b*) of said plunger barrel (51), and a peripheral wall thereof formed with at least one fuel supply hole (32*d*), said sleeve portion (32) of said element holder (30) and said plunger barrel (51) of said pump element (50) cooperating to define an annular fuel chamber (60) therebetween, said fuel supply hole (32*d*) in said sleeve portion (32) and said feed hole (51*a*) in said plunger barrel (51) opening in said fuel chamber (60) at locations different from each other in at least one of directions axial and circumferential of said sleeve portion (32) and said plunger barrel (51); a control sleeve (57) disposed for rotation in unison with said plunger (52); a tappet (80) disposed in contact with said plunger (52); a plunger return spring (54) for biasing said tappet (80) in a direction away from said plunger (52); and a spring seat (56) on which said plunger return spring (54) seats;

the improvement wherein:

said sleeve portion (32) of said element holder (30) is formed of a material having a hardness higher than that of a material forming said pump housing (20), and has a peripheral wall thereof formed with a notched portion (32*b*) and one end surface thereof formed with a recessed portion;

said spring seat (56) has an annular shape and receives said control sleeve (57) fitted therethrough and is disposed in contact with said one end surface of said sleeve portion (32) of said element holder (30); and

a control rod (43) engages with said control sleeve (57) for causing circumferential displacement thereof and has a radially inwardly projected portion (43*a*) inserted into said notched portion (32*b*) of said sleeve portion (32) of said element holder (30) and engages with said control sleeve (57) through a ball (58) mounted on the said control sleeve (57).

4,494,514

HYDRAULIC ADJUSTING DEVICE FOR CONTROLLING THE BEGINNING OF INJECTION OF AN INJECTION PUMP

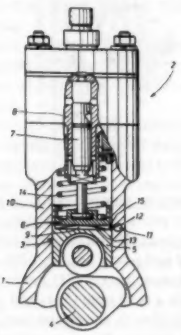
Ulrich Augustin, Kernen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,999

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206429

Int. Cl.³ F02M *59/30*

U.S. Cl. 123—504 **10 Claims**



1. Hydraulic adjusting device for controlling the initiation of injection by a fuel injection pump for an internal combustion engine of the type having a reciprocating pump shaft driven by a pump shaft roller tappet engaging a rotating crankshaft, or the like comprising:

a working chamber communicating with hydraulic control fluid which is pressurized in dependance on engine operating parameters, said working chamber being bounded by a tappet support for said tappet and a spring biased slidable inner piston member which is movable with the pump shaft,

and a cup washer disposed in the working chamber intermediate the tappet support and the inner piston member, said cup washer being configured to change the effective length of the pump injection stroke in dependence on the control pressure in the working chamber.

4,494,515

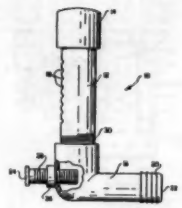
METHOD FOR MIXING GASEOUS FUEL WITH AIR

M. Wayne Brown, Orem, Utah, assignor to IPT Corporation, Provo, Utah

Division of Ser. No. 284,042, Jul. 17, 1981, Pat. No. 4,399,795. This application Jul. 20, 1983, Ser. No. 515,935

Int. Cl.³ F02B *43/00*

U.S. Cl. 123—527 **6 Claims**



1. A method of mixing gaseous fuel with air for subsequent combustion in an internal combustion engine, comprising the steps of:

obtaining a gaseous fuel from a fuel source at atmospheric pressure;

drawing air through an air intake system of the internal combustion engine, the air intake system having an air inlet for receiving the air and an air intake conduit for transporting the air from the air inlet to an air filter; and

introducing the gaseous fuel at atmosphereic pressure into the air intake system upstream from the air filter through a fluid channel mounted in the air intake conduit so as to allow the gaseous fuel to mix with the air passing through the air intake system and air filter.

4,494,516

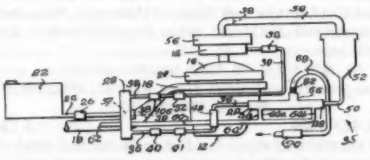
CARBURETOR/VAPORIZER

Ray M. Covey, Jr., 9700 Trinidad, El Paso, Tex. 79925

Filed Sep. 9, 1983, Ser. No. 530,759

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **6 Claims**



1. Carburetor/vaporizer apparatus adapted for retrofitting to an automobile having a petroleum fuel engine, a carburetor, a fuel tank, means for transmitting fuel from the fuel tank to the carburetor including a main fuel line, and the automobile also including an exhaust line, said apparatus comprising,

a first extension fuel line adapted to be connected with the main fuel line and leading to the carburetor,

a vapor adaptor applied to the carburetor and operative for

directing vapor passing therethrough into the air intake passage of the carburetor,

a vaporizer unit including an outer casing and a tubular vaporizer fuel line therethrough, the casing forming an exhaust gas chamber entirely surrounding the vaporizer fuel line,

a second extension fuel line adapted to be connected between the main fuel line and the vaporizer fuel line, the vaporizer fuel line being operable for conducting fuel through the vaporizer unit and confining it against escape into the exhaust gas chamber,

means for connecting the exhaust gas chamber to the exhaust line,

means operable for diverting a portion of the exhaust gases from the exhaust line to the exhaust gas chamber, the exhaust gas chamber leading to the exterior,

a vapor line connected between the vaporizer fuel line and the vapor adapter,

means responsive to temperature of the exhaust gases in the exhaust line for directing fuel from the main fuel line selectively to the first and second extension fuel lines, and

means responsive to temperature of the exhaust gases in the exhaust gas chamber for varying the rate of flow of gases through the exhaust gas chamber for correspondingly varying the temperature of the vapor in the vapor line.

4,494,517

METHOD AND APPARATUS FOR CONTROLLING AT LEAST ONE THROTTLE CROSS SECTION IN A CONTROL LINE

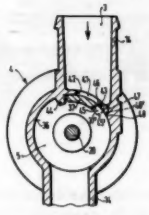
Alfred Kratt, Trossingen; Cornelius Peter, Stuttgart; Claus Ruppmann, Schwieberdingen, and Rainer Schillinger, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,937

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234468

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—585 **14 Claims**



1. A method for controlling at least one throttle cross section in a control line carrying an operating medium for an internal combustion engine by means of an electric control motor which actuates a throttle device counter to a spring element related to said throttle device in order to control a size of a throttle cross section which controls flow of said operating medium, wherein said throttle device, is movable by a spring element into a position in which it rests on a stop and a first throttle cross section is opened when said control motor is unexcited, and upon excitation of the control motor, the throttle device is actuatable in such a manner that said first throttle cross section is closed and after an intermediate adjustment path (s_1–s_2), during which said first throttle cross section is closed, during further movement of said throttle device a second throttle cross section is opened while said first throttle cross section continues to remain closed.

3. An apparatus for controlling at least one throttle cross section in a control line carrying an operating medium for an internal combustion engine, comprising an electric control motor, a control spring, a throttle device actuatable by said electric control motor counter to said spring element in order to influence an opening size of said at least one throttle cross section, a shaft in said apparatus, a control section in the form of a circular segment rotatably supported about said shaft relative to a control opening which intersects said control line and which serves as a throttle device, said control section being rotatable by means of the spring element into a position in which it rests against a stop and opens a first throttle cross section connecting the control line upstream of the control section with the control opening when the control motor is not excited, and said control section is rotatable upon the excitation of said control motor such that within an intermediate adjustment range (s_1–s_2) said control section closes each throttle cross section and subsequently thereto opens only a second throttle cross section, said second throttle cross section being formed in the intersection of the control line and the control opening.

4,494,518

ENGINE IGNITION INTERPOLATION APPARATUS

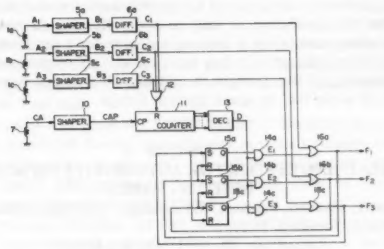
Hiroomi Katayama, Machida, and Yoshiaki Hirosawa, Shiki, both of Japan, assignors to New Nippon Electric Co., Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 12, 1982, Ser. No. 433,913

Claims priority, application Japan, Oct. 12, 1981, 56-160912

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—612 **12 Claims**



1. An engine ignition interpolation apparatus operatively connectable to an engine having an engine crank and pistons, comprising:

reference position signal generation means for generating first through third reference position signals indicative of the position of the pistons in the engine;

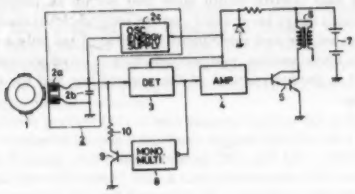
crank angle signal generation means for generating a crank angle signal indicative of the crank angle; and

signal processing means, operatively connected to said referenced position signal generation means and said crank angle signal generation means, for generating first through third primary ignition signals in dependence upon the first through third reference position signals and for generating first through third replacement ignition signals to replace the first through third primary ignition signals when one or a pair of the first through third reference position signals are absent in dependence upon the crank angle signal and the remaining first through third primary ignition signals.

4,494,519
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Katsuyoshi Masuno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,595
Claims priority, application Japan, Oct. 1, 1981, 56-146939[U]
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—615 **1 Claim**



1. A breakerless ignition system for an internal combustion engine comprising: a magnetically permeable rotor (**1**) driven in synchronism with an internal combustion engine, a core disposed in confronting relation to said rotor and having a coil (*2a*) wound therearound, a capacitor (*2b*) connected to said coil to form a resonant circuit therewith, a supply circuit (*2c*) for supplying said resonant circuit with oscillation energy, a threshold detector circuit (**3**) for detecting the condition of oscillation of said resonant circuit, an amplifier (**4**) for amplifying an output signal from said detector circuit, a switching element (**5**) driven by an output signal from said amplifier, an ignition coil (**6**) for generating a high voltage in response to intermittent operation of said switching element, a monostable multivibrator (**8**) triggered by the detector circuit output simultaneously with the deenergization of said switching element, and the series combination of a resistor (**10**) and transistor (**9**) connected between said resonant circuit and ground and responsive to an output of said multivibrator to forcibly suppress the oscillation of said resonant circuit and hold said switching element in a deenergized state for a predetermined period of time after it has been turned off to prevent false triggering of the detector circuit due to spurious signals induced in the coil by spark ignition firings.

4,494,520
SHEATHING SYSTEM FOR AUTOMOTIVE OR MARINE IGNITION WIRES

Scott L. Hurwitz, Fairport, N.Y., assignor to Magnum Shielding Corp., Pittsford, N.Y.

Filed Jan. 19, 1983, Ser. No. 459,054
Int. Cl.³ F02P *15/00*; H01R *4/64*
U.S. Cl. 123—633 **6 Claims**

1. A system of organizing and grounding a set of ignition wires covered with braided metallic sheaths terminating at an electrically insulating distance from terminal end regions of said wires, which when installed on an engine are spread apart from each other to attach to spark plugs at one terminal end region and to an electrical input at another terminal end region, said system comprising:

a. an organizer strip formed of electrically conductive material;

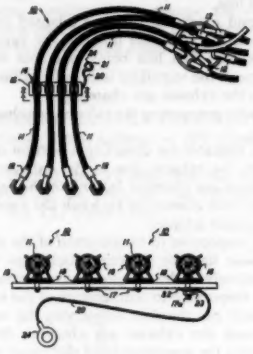
b. said organizer strip extending longitudinally far enough to span a transverse distance across a plurality of said wires;

c. means for securing said plurality of sheathed ignition wires in parallel positions on said strip so that said organizer strip forms an electrical common between said sheaths of the secured ignition wires;

d. said organizer strip being secured to mid-regions of said sheaths in a location that can vary between ends of said sheaths;

e. said organizer strip having no fixed connection other than to said sheaths so that said organizer strip is movable with said sheathed ignition wires throughout a limited range of movement;

f. a flexible ground wire having an end termination connectable to ground; and

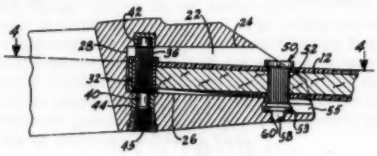


g. said flexible wire being arranged for providing an electrical path from said electrical common to ground.

4,494,521
ARCHERY BOW HAVING BOW LIMB ASSEMBLY AND ADJUSTMENT

Miguel A. Quartino, St. Louis, Mo., assignor to Hoyt/Easton Archery Co., Bridgeton, Mo.

Filed Apr. 4, 1983, Ser. No. 481,929
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **4 Claims**



1. In an adjustable limb, take-down bow, an elongated handle section having a socket extending longitudinally inward at each end thereof and having spaced front and rear walls and a bottom wall, a pair of flat bow limbs having front and rear sides and having the butt sections thereof inserted into said sockets between said front and rear walls, a short T slot in each rear socket wall extending longitudinally inward from its outer end, a member fixed in each butt section and having an enlarged head projecting from the rear side thereof slidably inserted in said T slots whereby said bow limbs are restrained from kicking forward, the spacing of said front and rear socket walls being substantially greater than the thickness of said limb butt sections and said enlarged heads being loosely received in said T slots whereby said butt sections may rock on said rear socket walls near the outer ends thereof as the inner ends of said butt sections are adjustably moved fore and aft, a screw operated limb adjustment member positioned in each of said sockets near its bottom wall for adjustably moving the inner ends of said butt sections fore or aft comprising an operating screw journalled in said front and rear socket walls and having screw threaded engagement with said adjustment member and said adjustment member having spaced front and rear walls parallel with said front and rear socket walls and spaced so as to slidably receive and retain the inner ends of said butt sec-

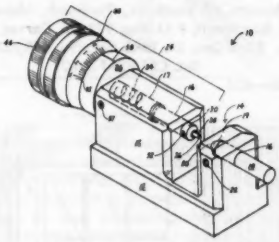
tions therebetween, and a spring pressed detent element projecting centrally from each of said heads and entered into an aperture in each of said rear socket walls.

4,494,522

SIZE DRESSER FOR GRINDING WHEELS

Dimitrije R. Vasovich, 749 E. Brokaw Rd., San Jose, Calif. 95112

Filed May 2, 1983, Ser. No. 490,342
Int. Cl.³ B24B *53/12*
U.S. Cl. 125—11 DF 19 Claims



1. A size dressing apparatus for disklike elements, comprising:

a base block having a transverse gap and an axial bore formed therethrough;

means for securing a first abrasive element along the axis of said bore at a point within said gap; and

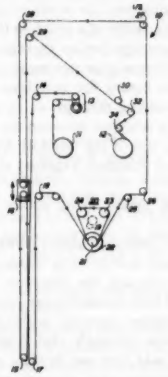
positioning means for positioning a second abrasive element smaller than said first abrasive element, along the axis of said bore at points within said gap opposing said first abrasive element.

4,494,523

WIRE SAW

Raymond C. Wells, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1983, Ser. No. 520,776
Int. Cl.³ B28D *1/08*
U.S. Cl. 125—16 R 5 Claims



1. In a wire saw apparatus having a wire supply means, a wire takeup means, a plurality of wire guides defining a continuous path between said supply means and said take-up means and defining a cutting zone, and a reversible motor driving a pulley in said continuous path, the improvement comprising:

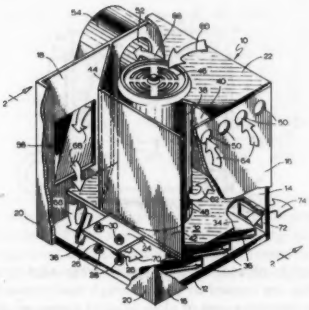
wire storage means in said continuous path comprising carriage means having at least one pair of pulleys having separate axes, wherein said carriage means moves vertically between predetermined limits and is supported only by the wire in said wire storage means.

4,494,524

CENTRIFUGAL HEATING UNIT

Lee Wagner, Box 128, Buffalo Gap, S. Dak. 57722

Filed Jul. 19, 1982, Ser. No. 399,440
Int. Cl.³ F24C *9/00*
U.S. Cl. 126—247 29 Claims



1. A heating apparatus comprising:

a housing defining a chamber for containing a viscous liquid, the chamber being defined by a plurality of generally planar walls which meet at opposed corners spaced about a periphery of the chamber in cross-section along a first plane;

a plate unit positioned within the chamber for rotation about a central drive axis while immersed in the viscous liquid, the drive axis being perpendicular to the first plane and the plate unit comprising:

a first disk generally perpendicular to the drive axis, the first disk having its periphery in close tolerance to an intermediate portion of each of the walls and having a first passage means for permitting flow of viscous liquid through the first disk;

a second disk generally perpendicular to the drive axis, the second disk having its periphery in close tolerance to an intermediate portion of each of the walls and having second passage means for permitting flow of viscous liquid through the second disk;

means for attaching the first and second disks in an axially spaced apart, generally parallel, fixed relation with a region between the first and second disks in communication with the first and second passage means; and

motor means for rotating the plate unit about the drive axis within the chamber to cause heating of the viscous liquid.

4,494,525

STOVE WITH CATALYTIC CONVERTER

Peter S. Albertsen, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 2, 1980, Ser. No. 136,687
Int. Cl.³ F23V *15/00*; F23L *11/00*
U.S. Cl. 126—289 3 Claims

1. A stove comprising

a fire box having therein a combustion chamber,

a door on said box movable between open and closed positions relative to a first opening in said box,

means for admitting air for combustion to said chamber, including a second opening in said box adjacent the bottom thereof,

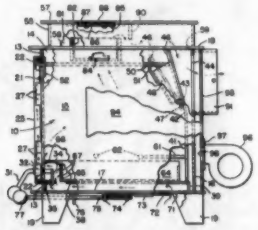
said box having therein two further openings for exhausting

combustion gases from said chamber to the exterior of said box,

a catalytic converter mounted in one of said two further openings which is located in the top of the firebox, said converter comprising a cellular structure having a plurality of closely-spaced cells or ducts extending axially therethrough and appearing in cross-section with walls of the cells or ducts arranged in intersecting rows and columns,

means for selectively closing the other of said two further openings,

said converter being positioned so that, when said other



opening is closed, all said gases from said combustion chamber are caused to pass through said converter,

said door has two panes of glass secured across an opening in said door in spaced, parallel relation,

at least a portion of the peripheral edge of each of said panes is spaced from a portion of the periphery of the opening in said door, thereby to admit additional air to said chamber through said opening in the door, and

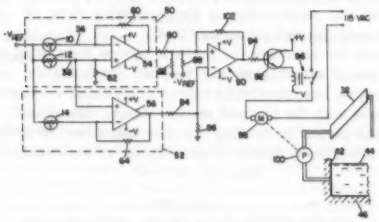
said portions of said edges of said panes are located adjacent opposite edges of the opening in said door, whereby said additional air passes through the space between said panes during passage thereof into said combustion chamber.

4,494,526

TEMPERATURE SENSING

William C. Wurst, Amherst, and Donald W. Fyfe, Hollis, both of N.H., assignors to Solar Decisions, Inc., Hollis, N.H.

Filed Feb. 28, 1983, Ser. No. 470,042
Int. Cl.³ F24J 3/02
U.S. Cl. 126—419 **21 Claims**



1. In a system for transferring thermal energy as between a solar energy collector and a storage area,

a first temperature sensitive transducer for sensing incident solar radiation and producing an output proportional thereto;

a second temperature transducer for sensing the ambient temperature and producing an output proportional thereto;

a third temperature sensitive transducer for sensing the temperature of energy transfer fluid in said storage area and producing an output proportional thereto;

a first comparator which includes said first and second temperature sensing transducers and is adapted to provide a first control signal representing the effective incident solar radiation;

a second comparator which includes said second and third temperature sensitive transducers and is adapted to provide a second control signal representing the effective parasitic heat loss; and

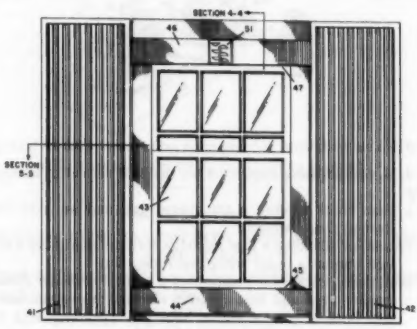
a third comparator responsive to said first and to second control signals for producing an output only when said control signals indicate net available thermal energy.

4,494,527

SOLAR HEATING

Marlene Resnick, 65 South St., Plymouth, Mass. 02360, and Roger C. Startevant, P.O. Box 972, So. Carver, Mass. 02341

Filed Dec. 13, 1982, Ser. No. 448,923
Int. Cl.³ F24J 3/02
U.S. Cl. 126—422 **4 Claims**



1. Solar heating apparatus for exchanging energy through double-hung window openings comprising,

means defining a solar collector chamber means for heating air therein in response to solar energy,

said solar collector chamber means having inlet means at the bottom for receiving cool air and outlet means at the top for expelling warm air,

inlet conduit means adapted to pass through an opening at the bottom of a double-hung window between the lower sash of said window and the window sill for coupling said inlet means to the inside of a building through said bottom opening and receiving cool air therethrough for warming in said solar collector chamber means,

and outlet conduit means for coupling said outlet to the inside of said building through an opening at the top in said double-hung window between the upper sash of said window and the top of the window frame for delivering warm air to said building expelled through said outlet means,

said outlet conduit means being above said inlet conduit means,

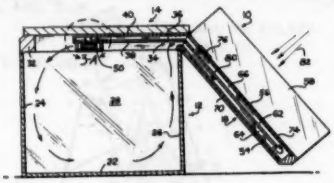
said solar collector chamber means being adapted for positioning beside said double-hung window with said outlet conduit means adapted for insertion through said top opening and said inlet conduit means adapted for insertion through said bottom opening without appreciably obstructing the view through said double-hung window except through said top and bottom openings with the unobstructed viewing area through said window being significantly greater than the area of said top and bottom openings,

said solar collector chamber means comprising solar collecting chambers separated by the window width adjacent to each side of said window and intercoupled at the top by said outlet conduit means and at the bottom by said inlet conduit mean.

4,494,528
SOLAR HEATING SYSTEM FOR BEEHIVES AND OTHER ENCLOSURES

David J. Horton, 452 Ezie St., San Jose, Calif. 95111

Filed Jul. 5, 1983, Ser. No. 510,550
Int. Cl.[3] F24J 3/02; A01K 47/00
U.S. Cl. 126—429 13 Claims



1. A solar heating system for an enclosure comprising:

a fixed base assembly attached over an opening in said enclosure and provided with a first cool air duct communicating with an enclosed space within said enclosure and a first warm air duct communicating with said enclosed space, and having an inner side facing said enclosed space and an outer side facing away from said enclosed space, said base assembly having a beveled first interface edge provided with a first cool air slot communicating with said first cool air duct and a first warm air slot communicating with said first warm air duct;

a movable collector assembly provided with a second cool air duct and a second warm air duct, and a solar heated surface over which air may flow from said second cool air duct to said second warm air duct, said collector assembly having a beveled second interface edge provided with a second cool air slot communicating with said second cool air duct and a second warm air slot communicating with said second warm air duct; and

hinge means coupling said collector assembly to said fixed base assembly proximate said first beveled interface edge and said second beveled interface edge such that said collector assembly can move between a heating position where said first interface edge and said second interface edge abut in a miter such that said first cool air duct communicates with said second cool air duct through said first cool air slot and said second cool air slot and where said first warm air duct communicates with said second warm air duct through said first warm air slot and said second warm air slot, and a non-heating position where said collector assembly substantially overlies said base assembly.

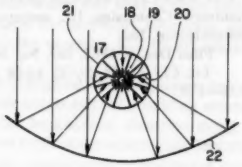
4,494,529
SOLAR TRAP

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Division of Ser. No. 095,535, Nov. 19, 1979, which is a continuation-in-part of Ser. No. 574,529, May 5, 1975, abandoned. This application Dec. 30, 1981, Ser. No. 335,805
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—439 4 Claims

1. A device for concentrating and collecting the solar energy comprising in combination:

(a) a sun light funneling and absorbing assembly including a transparent tubing; a plurality of flat dual-sided reflecting members disposed radially in a substantially axisymmetric pattern within said transparent tubing wherein the angle between two adjacent reflecting surfaces of said plurality of flat dual-sided reflecting members is greater than six degrees and less than thirty five degrees and the distance between the outer edges of two adjacent reflecting surfaces of said plurality of flat dual-sided reflecting members is greater than one and three quarters inches; a heating vessel disposed coaxially inside of said transparent tubing for carrying a heating fluid; and a plurality of heat absorbing fins affixed to and extending radially from said heating vessel a short distance in a substantially axisymmetric pattern wherein each of said plurality of heat absorbing fins is disposed intermediate an adjacent pair of said flat dual-sided reflecting members; whereby, the sunlight entering through said transparent tubing in a substantially radial direction with respect to said assembly is funneled toward said heating vessel by said plurality of flat dual-sided reflecting members and absorbed by said plurality of heat absorbing fins through the repeated irradiation process wherein the sunlight is reflected back and forth between one of said flat dual-sided reflecting members and one adjacent heat absorbing fin, and between two adjacent heat absorbing fins of said plurality of heat absorbing fins; and

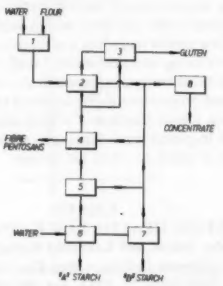


(b) one or more curved light reflecting surfaces disposed about said sunlight funneling and absorbing assembly wherein said one or more curved light reflecting surfaces reflects the sun light towards said sunlight funneling and absorbing assembly in a roughly focused manner.

4,494,530
SEPARATION OF GLUTEN AND STARCH FROM WHEAT FLOUR

Wytze Jansma; Jan Mars, both of Nijmegen; Pieter G. Stoutjesdijk, Wychen, and Herman J. Vegter, Santpoort, all of Netherlands, assignors to Latenstein Zetmeel B.V., Rotterdam, Netherlands

Filed Mar. 15, 1983, Ser. No. 475,507
Claims priority, application United Kingdom, Mar. 25, 1982, 8208768
Int. Cl.[3] C13L 1/00
U.S. Cl. 127—69 3 Claims



1. A process for separating wheat starch and gluten, present in a pentosan-containing aqueous wheat flour slurry, which process comprises the steps of feeding said aqueous flour slurry into a first section of a hydrocyclone apparatus which delivers a starch-rich underflow fraction, and an overflow fraction containing gluten and some starch; removing agglomerated gluten from said overflow fraction by screening; centrifuging the starch-containing throughput from this screening operation and the underflow fraction from said first section of the hydrocyclone apparatus thereby to separate off a pentosan-contain-

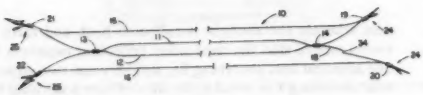
ing water fraction as centrifuge overflow; and feeding the centrifuge underflow into a second section of the hydrocyclone apparatus in which second section starch is washed in counter-current with water and from which a concentrated washed starch fraction is delivered as underflow, whereby the separation of the pentosan-containing water fraction improves the yield of starch from the second section of the hydrocyclone apparatus.

4,494,531

EXPANDABLE BLOOD CLOT FILTER

Cesare Gianturco, Champaign, Ill., assignor to Cook, Incorporated, Bloomington, Ind.

Filed Dec. 6, 1982, Ser. No. 447,420
Int. Cl.³ A61M *29/00*; A61B *19/00*
U.S. Cl. 128—1 R **14 Claims**



1. A blood clot filter for positioning within the fluid passageway of a blood vessel in a human body, comprising:

a shape memory wire, said wire contractible from a first position wherein said wire is substantially straightened to permit insertion of the filter within the lumen of an angiography catheter, to a second position wherein said wire is contracted along its length to form a curly wire mesh, the potential energy stored in said wire in its first position being sufficient to force said wire into its second position and into urging contact with the intimal wall of said blood vessel at a multiplicity of contact points, thereby aiding the anchoring of said filter at a desired body location within said blood vessel and encouraging endothelization and fibrotic encasement at said contact points, said wire having a sufficiently small diameter to prevent substantial occlusion of said blood vessel when said filter is implanted therein; and

anchoring means on said wire for anchoring said filter at a determined body location within said blood vessel, said anchoring means including a plurality of sharp projections for penetrating into said intimal wall of said blood vessel;

said projections being positioned at the opposite ends of said filter, said projections at the forward end of said filter each including a barb sharpened at both ends, said barbs being adapted to pierce the intimal wall of said blood vessel and to hook in place to resist extraction.

4,494,532

TILTING HEALTH TABLE APPARATUS

Teruo Masuda, Tokyo, and Kazuyuki Yamaguchi, Sayama, both of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed May 25, 1983, Ser. No. 498,142
Claims priority, application Japan, Jun. 17, 1982, 57-90511[U]; Dec. 10, 1982, 57-216367; Feb. 17, 1983, 58-21973[U]
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—71 **10 Claims**

1. A tilting health table apparatus comprising:

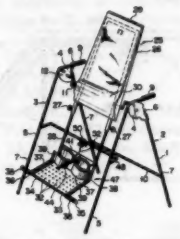
a leg assembly;

a pair of first handles fitted in a substantially horizontal manner to both sides of the upper portion of the leg assembly;

a table rotatably mounted on said leg assembly to support a user;

stopper means for keeping said table in a prescribed position to restrict its movement;

a foot board mounted on one end of said table, said foot board being provided with a foot-gripping means for securely gripping the user's legs, said foot-gripping means



including a first support board rotatably mounted on said table, a second support board fixed to said table and means for securely mounting said first support board on said second support board; and

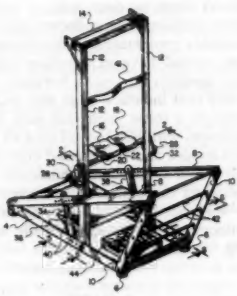
a pair of second handles projectively fitted to both sides of said foot board.

4,494,533

ASYMETRICALLY ADJUSTABLE TRACTION DEVICE

Nunzio B. Sgroi, 30830 Janlor Dr., Westlake Village, Calif. 91362, and Patrick E. Duffy, Hemet, Calif., assignors to Nunzio Sgroi, Camarillo, Calif.

Filed Apr. 6, 1982, Ser. No. 366,096
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **9 Claims**



1. A traction device of the type having an upstanding frame and a body support means carried on the frame for suspending a person from the midsection region in order to stretch the spinal column, the improvement comprising:

first and second body support members having noncircular contoured surfaces for receiving the left and right sides of a person's midsection region, respectively,

means for mounting said body support members to said frame generally adjacent each other and elevated sufficiently for a person to be suspended over said members with the left and right sides of the midsection respectively supported on the first and second members, and said means for mounting comprises first and second rotational members respectively mounting the first and second body support members, the angular orientation of the body support members being determined by the rotational position of their respective rotational members, and

means for independently adjusting the angular orientations of said first and second body support members about the same general horizontal axis, whereby the amount of

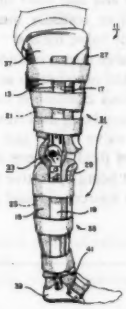
stretch imparted to the left and right sides of the body may be independently controlled.

4,494,534

UNIVERSAL LEG BRACE SYSTEM

Floyd E. Hutson, Arlington, Tex., assignor to Medical Designs, Inc., Azle, Tex.

Filed Mar. 7, 1983, Ser. No. 472,927
Int. Cl.³ A61F 3/00
U.S. Cl. 128—80 F **18 Claims**



1. A universal leg brace system for supporting and controlling the degree of motion permitted by a wearer's knee, comprising:

a. first and second flexible sheets of cushioned material, one of which being adapted for snugly wrapping around the wearer's thigh and the other being adapted for snugly wrapping around the wearer's calf, the width of each sheet being sufficient to circumferentially envelop at least most of its associated leg member, the length of each sheet being sufficient to encompass more than half the length of its respective leg member; said flexible sheets being selectively removeable and replaceable around the wearer's leg member;

b. first and second pairs of elongate braces, each of said braces being relatively stiff so as to resist both torsion and bending loads, said first pair of elongate braces being adapted to lie on opposite sides of the wearer's thigh and the second pair of elongate braces being adapted to lie on opposite sides of the wearer's calf;

c. at least first and second pairs of rear stays adapted for being connected respectively with said first and second flexible sheets for providing posterior structural support in the longitudinal direction; said first pair of rear stays being adapted to provide posterior structural support in the longitudinal direction along the posterior of the thigh; said second pair of rear stays being adapted to provide posterior structural support in the longitudinal direction along the posterior of the calf;

d. means for connecting said first and second pairs of rear stays with said first and second flexible strips;

e. tibial plate adapted for being connected respectively with said other flexible sheet around the wearer's calf for providing anterior structural support in the longitudinal direction; said tibial plate being adapted to provide anterior structural support in the longitudinal direction along the anterior portion of the calf;

f. means for adjustably positioning and selectively attaching said first and second pairs of elongate braces to said flexible sheets and said tibial plate to the exterior sides of said other sheet after said sheet has been wrapped around the wearer's calf leg member, said braces having central ends which are near one another when respective sheets are wrapped around their respective associated leg members and the braces are attached to the respective sheets;

g. hinge means attached to respective central ends of said braces and adapted to lie on each side of the wearer's knee; said hinge means being effective for controlling the angle that is formed by the two braces on a given side of the wearer's leg; and

h. a plurality of strong straps which are selectively attached to said braces and encompass respective said braces, rear stays and plates and which are adapted to be wrapped circumferentially around the wearer's respective leg members; said straps having connection means so that they can be placed in tension around the wearer's leg and secured to said braces and hold in place said braces, rear stays and plates for providing substantial structural support without the necessity of a totally encompassing leg cast;

i. a femoral plate adapted for being connected with said one of said flexible sheets and for providing anterior structural support in the longitudinal direction along the anterior portion of the thigh of the wearer; said femoral plate being adapted to be encompassed by said straps about said thigh of a wearer; and

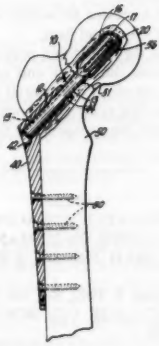
j. means for at least temporarily connecting said femoral plate with said one of said flexible sheets snugly wrapped around the wearer's thigh; said means for attaching said femoral plate being means for adjustably positioning and selectively attaching said femoral plate prior to being encompassed by said strong straps.

4,494,535

HIP NAIL

Armen C. Haig, 85 Pondfield Rd., Bronxville, N.Y. 10708

Filed Jun. 24, 1981, Ser. No. 277,039
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 BA **3 Claims**

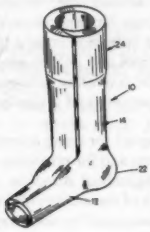


1. In a hip fixation nail for treating a fractured hip bone comprising a shank having a head portion at the distal end thereof, the head portion comprising a plurality of flanges separated by fluted areas, the entire length of the nail being cannulated by a bore; an elongated plate, attachable by means of fasteners to said bone, having bore means adjacent one end thereof for cooperatively receiving said shank; the improvement wherein a plurality of ports are located in the fluted areas in communication with the bore adjacent the distal end to allow deposition of a hardenable liquid polymeric material in the area surrounding the head portion but not at the fracture site in the hip bone to form a tighter bond between the nail and the fractured hip bone.

4,494,536
FOAM BOOT

John F. Latenser, 604 Ridgewood Ave., Omaha, Nebr. 68114

Filed Dec. 1, 1982, Ser. No. 445,908
Int. Cl.³ A61F 5/30
U.S. Cl. 128—153 2 Claims

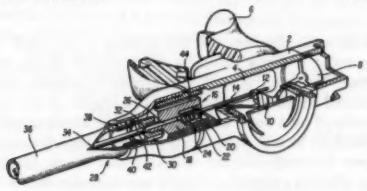


1. A foam boot for use on medical patients, comprising,
a foot embracing portion for embracing the patient's foot and including an open forward toe end,
a leg embracing portion extending upwardly from said foot embracing portion for embracing a predetermined portion of the patient's leg,
said foot and leg embracing portions being of one-piece construction,
said foot and leg embracing portions being comprised of a cushion foam material,
said foot and leg embracing portions having tapered overlapping edge portions to permit the boot to be closely and evenly positioned on the patient's foot and leg,
said foot embracing portion having inner and outer margins, said foot embracing portion having an increased thickness along the outer margin thereof,
said foot embracing portion also having a heel portion and having an increased thickness circumferentially about the heel portion thereof,
said increased thicknesses providing additional cushioning for the patient's foot and heel,
the height of said leg embracing portion being greater than needed to permit the upper end of said leg embracing portion to be cut off to the desired length,
the length of said foot embracing portion being greater than needed to permit the forward end thereof to be cut off as required.

4,494,537
BREATHING APPARATUS FOR SUPPLYING FLUID TO A USER ON DEMAND

Mark P. Gottlieb, 941-B 25th St., N.W., Washington, D.C. 20037

Filed Jun. 8, 1982, Ser. No. 386,396
Int. Cl.³ A62B 7/00; B63C 11/00
U.S. Cl. 128—204.26 8 Claims



1. A breathing apparatus for supplying fluid to a user on demand, said apparatus comprising:
a source of fluid under elevated pressure;
a casing having an outlet for said user;
fluid supply valve means connected to said source, said fluid supply valve means being positioned adjacent said source;
a first conduit providing a fluid path between said fluid supply valve means and said casing;
pilot valve means in said casing;
means supplying a fluid signal from said pilot valve means to said fluid supply valve means for opening said fluid supply valve means wherein said means for supplying a fluid signal comprises a second conduit connected between said pilot valve means and said fluid supply valve means; and
fluid pressure sensitive actuator means in said casing for actuating said pilot valve means;
wherein said fluid valve means includes means for supplying fluid under elevated pressure to said second conduit and wherein said second conduit is connected to said pilot valve means for supplying said fluid under elevated pressure to said pilot valve means and a valve element sensitive to a change of fluid pressure in said second conduit, said valve element being operative to provide a fluid flow path between said source and said first conduit.

4,494,538
MASK ASSEMBLY

William K. Ansite, Glendale, Calif., assignor to Figgie International Inc., Willoughby, Ohio

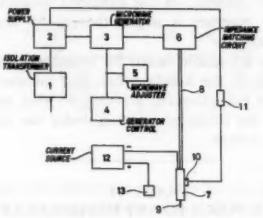
Filed Apr. 6, 1983, Ser. No. 482,622
Int. Cl.³ A62B 7/00
U.S. Cl. 128—205.25 9 Claims

1. A oral nasal mask assembly adapted for use with a source of pressurized breathing gas and adapted to be either placed directly over a patient's face or to be connected to a gas mask previously being worn by the patient, said gas mask having an exhalation valve and a filter for filtering gases passing into the gas mask, said filter including means defining an inlet; said oral nasal mask assembly comprising:
an oral nasal mask which can be placed over the face of a patient:
a source of pressurized breathing gas;
tubing means having one end connected to said source of pressurized breathing gas, connector tube means connected to said oral nasal mask and having a first end extending into and terminating within said oral nasal mask and an opposite second end connected to the other end of said tubing means, said first end of said connector tube means adapted to be secured within the inlet of said gas mask in an airtight relationship; and
holding means capable of holding the oral nasal mask over a patient's face in the event the patient is not wearing a gas mask.

4,494,539
METHOD AND APPARATUS FOR SURGICAL OPERATION USING MICROWAVES

Toshio Zenitani, 1-23-603, Nigawa-kita 1-chome, Takarazuka-shi, Hyogo-ken, Japan (665), and Katsuyoshi Tabuse, 831-54, Otani, Wakayama-shi, Wakayama-ken, Japan (640)

Filed May 4, 1982, Ser. No. 374,884
Claims priority, application Japan, Apr. 3, 1982, 57-55583; Apr. 3, 1982, 57-55584
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.1 3 Claims



1. A surgical operation method utilizing microwave energy comprising the steps of:

inserting a monopolar type operating electrode into bio-tissue;

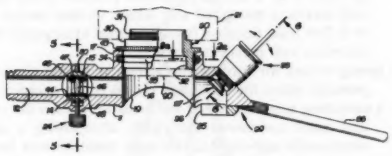
radiating microwave energy from said operating electrode into said bio-tissue for performing coagulation, hemostasis, or transection on said bio-tissue with thermal energy generated from the reaction of said microwaves on said bio-tissue; and

applying a predetermined cathodal current for a predetermined period to said operating electrode after completion of said radiation of microwave energy, thereby generating moisture by electrolysis on an interface between said operating electrode and said bio-tissue to enable said operating electrode to be dissociated from said bio-tissue.

4,494,540
UNIVERSAL MICROSLAD

Robert C. Erb, 433 Brockmont Dr., Glendale, Calif. 91202

Filed Nov. 2, 1982, Ser. No. 438,612
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.1 42 Claims



1. An apparatus for directionally controlling transmission of a laser beam or the like to a target area, comprising in combination,

a housing having first a chamber with an open terminus for introduction of the beam or the like for transmission therealong, and second a passageway formed by wall means in said housing intersecting the chamber, the passageway open to atmosphere and providing an unobstructed line of sight to the target area for an operator utilizing said apparatus,

lens means mounted in the chamber for focusing such beam or the like,

a specular element mounted in said housing in alignment with such chamber for directing the beam or the like transmitted through the chamber to atmosphere in the direction of the target area,

means mounted on said housing and being operatively connected to said specular element for moving the element, thereby directionally controlling such beam or the like as it is being transmitted in the direction of the target area from said specular element, said moving means being manipulatable exteriorly of said housing, and

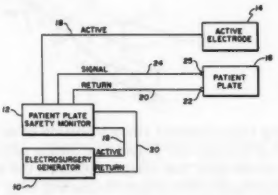
means for universally mounting and rotating the housing to an adaptor or the like,

said mounting and rotating means formed in a body portion of said housing forming such passageway.

4,494,541
ELECTROSURGERY SAFETY MONITOR

G. Kent Archibald, White Bear Lake, Minn., assignor to Medical Plastics, Inc., Milford, Conn.

Division of Ser. No. 113,106, Jan. 17, 1980, Pat. No. 4,303,073.
This application Nov. 2, 1981, Ser. No. 317,555
Int. Cl.³ A61B 17/36
U.S. Cl. 123—303.13 9 Claims



1. In an electrosurgery system having an active electrode which is selectively activated to receive current from an electrosurgery generator and apply the current to the patient and having a return electrode for connection to the body of the patient to return the current from the patient to the generator, the improvement comprising:

sensing means for sensing a parameter indicative of area of contact between the return electrode and the body of the patient;

alarm means responsive to the sensing means for providing an alarm signal if the area of contact is less than a predetermined amount; and

disable means responsive to activation of the active electrode for disabling the alarm means to prevent the alarm signal from being provided when current is supplied to the active electrode, while permitting the sensing means to continue to sense the parameter.

4,494,542
SUTURE CUTTER, EXTRACTOR AND METHOD TO CUT AND REMOVE SUTURES

Mary K. Lee, 176 Llydican Ave., Ext., Chatham, Ontario, Canada N7L 3E8

Filed Jun. 7, 1982, Ser. No. 386,004
Claims priority, application Canada, Mar. 31, 1982, 400253
Int. Cl.³ A61F 17/32
U.S. Cl. 128—305 8 Claims

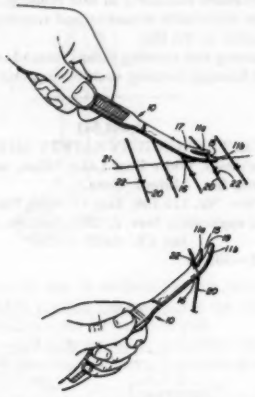
1. Apparatus for cutting and extracting a suture, comprising:

a longitudinally extending body;

a handle extending from an end of said body;

a pair of curvilinear tine means extending from the other end of said body, and curving outwardly upwardly above a plane through the handle and the longitudinal axis of said body, the tine means having blunt innermost edges and rounded free ends insertable under the suture, wherein the tine means are of unequal length, the longer tine longer of said tine means being adapted for insertion under the suture, and the tine means having rounded free ends with blunt edges to avoid injuring a patient;

a slot between the tine means open at the free ends thereof to admit and receive the suture when one of said free ends is inserted thereunder, said slot having converging edges defined by said innermost edges of said tine means and a closed end at the body to snare and retain a knot in said suture; and



a cutting edge disposed along a portion of an outermost side edge of at least one of said tine means adjacent the closed end of the slot, whereby rotation of the body about the knot in the suture engages the cutting edge with the suture for severing the suture which is then removed by lifting the knot in said suture snared and retained in the closed end of said slot.

4,494,543

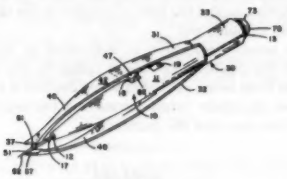
INSTRUMENT FOR EXTRACTING SPLINTERS

Ernest D. Hart, 4006 E. Andrews, Fresno, Calif. 93726

Filed Mar. 5, 1982, Ser. No. 354,144

Int. Cl.³ A61B *17/30*

U.S. Cl. 128—354 **5 Claims**



1. An instrument for extracting splinters and the like comprising:

A. an elongated handle having a pair of opposite ends and defining a central cavity extended longitudinally within the handle from one such end;

B. a pair of elongated arms which are mounted on the handle and disposed transversely oppositely and exteriorly thereof and are extended longitudinally thereof, the arms having respective jaws which are extended longitudinally from the handle beyond said one end and are aligned in a direction transversely thereof, one of the arms being mounted on the handle for movement of the jaw thereof from the other of the jaws and toward such other jaw for engagement therewith, and such one arm having means for resiliently urging the jaw thereof from such other jaw;

C. an elongated member having a piercing end and an opposite end, said member extending within the cavity with the piercing end disposed at such one end of the handle and said member being received in the cavity for movement longitudinally of the cavity between a retracted position in which the piercing end is longitudinally spaced from the jaws in a direction toward the end of the handle opposite such one end and an extended position in which said end is extended beyond the jaws longitudinally of the handle from the cavity and said one end;

D. retracting means for resiliently urging the elongated member longitudinally of the handle in a direction from the extended position toward the retracted position;

E. manually actuatable extending means for urging the elongated member into the extended position from the retracted position against the urging of the retracting means;

F. means for latching the elongated member to the handle to retain said member in the extended position when the elongated member is urged thereto by the extending means; and

G. manually actuatable means for unlatching the elongated member from the handle when said member is latched thereto in the extended position so that said member moves to the retracted position under the urging of the retracting means.

4,494,544

RELAY FOR A HEART DEFIBRILLATOR

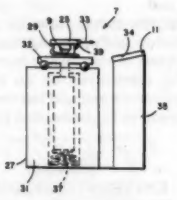
Willibrordus J. S. Lambert, Eindhoven, Netherlands, assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 077,424, Sep. 20, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,365

Claims priority, application Netherlands, Sep. 27, 1978, 7809766

Int. Cl.³ H61R *1/30*

U.S. Cl. 128—419 D **5 Claims**



1. A relay for a heart defibrillator comprising:

relay coil means for actuating the relay;

pivotable armature means which rotates to a first rotational position from a second rotational position when the relay coil means is energized and which further moves axially to a first axial position from a second axial position when the relay coil means is energized;

spring means for forcing the armature to the second axial position when the relay coil means is not energized;

a switching arm secured to the armature means for rotation and axial movement therewith, comprising a strip of electrically non-conductive rigid material and having a smallest dimension oriented perpendicular to the plane of rotation of the arm;

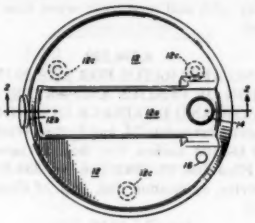
a moveable contact disposed on an end of the arm which is remote from the armature for movement therewith; and a fixed contact disposed to engage a moveable contact when the relay is energized and having a contact face which encloses an angle between 5° and 30° in the direction of rotational movement of the moveable contact;

wherein the armature has sufficient axial movement between the first and second axial positions so that when the relay coil means is energized and the armature is in the first rotational position and the first axial position, the moveable contact is pressed against the fixed contact, while when energizing of the relay coil means is terminated the armature moves to the second axial position and the movable contact is clear of the fixed contact.

4,494,545
IMPLANT TELEMETRY SYSTEM

Chester D. Slocum, and John R. Batty, Jr., both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Division of Ser. No. 153,093, May 27, 1980, Pat. No. 4,361,153.
This application Aug. 9, 1982, Ser. No. 406,367
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 P 21 Claims



1. External data telemetry apparatus for receiving data communications from a biomedical implant, comprising

a coil assembly having at least three coaxial spaced electrical coils,

transmitter means operatively interconnected with a middle one of said coils for radiating a magnetic carrier signal,

means for providing a pickup signal indicative of the difference between the voltages induced in at least one pair of other ones of said coils on opposite sides of said middle coil,

phase shift detector means operatively connected to receive said pickup signal for producing an output signal level as a function of the relative phase angle of said pickup signal,

and information signal processing means for digitally demodulating said output signal level to recover a digitally encoded data signal from said implant,

whereby digitally modulated resonance within the implant is effectively employed as a low power communications medium.

4,494,546
MATERNITY BATHING SUIT

Nancy Steiman, 950½ 16th St., Santa Monica, Calif. 90403

Filed Jun. 17, 1983, Ser. No. 505,444
Int. Cl.³ A41C *1/06, 1/08*
U.S. Cl. 128—431 12 Claims

1. In a maternity garment having a front portion and a back portion each having left and right sides joined to each other at left and right side seams, the improvement comprising

first and second bands, each consisting substantially only of elastically deformable material, said first band supporting the lower abdomen of the wearer in the uterine area, and said second band supporting the small of the wearer's back, said bands being substantially rectangular and having left and right ends and upper and lower edges,

said ends of the first and second bands being connected respectively to the front and back portions of the garment and to each other at said side seams, and

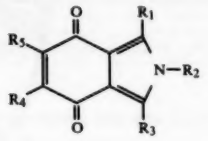
the respective ends of the first and second bands being offset from each other, with the upper edge of the second band positioned higher on the body of the wearer than the upper edge of the first band.

4,494,547
2H-ISOINDOLEDIONES, THEIR SYNTHESIS AND USE AS RADIOSENSITIZERS

John A. Myers, Durham, N.C., assignor to North Carolina Central University, Durham, N.C.

Filed Mar. 30, 1981, Ser. No. 248,793
Int. Cl.³ A61K *49/00*; A61N *5/10*
U.S. Cl. 128—659 19 Claims

12. A radiosensitizing composition for use in the radiotherapeutic treatment of cancerous tissues which comprises as an active ingredient an isoindoledione compound of the formula



wherein:

R_1 and R_3 each separately is phenyl, substituted phenyl, alkyl of 1 to 4 carbons, —CHO, $—CH_2OR_6$, $—CO_2R_6$, $—COR_6$, hydrogen, or together with R_2 are a divalent alkyl or alkenyl group of 3 to 5 carbons which form a cyclic ring;

R_2 is phenyl, substituted phenyl, $—CH_2OR_6$, $—CH_2CH_2OR_6$, alkyl of 1 to 4 carbons or with either R_1 or R_3 is a divalent alkyl or alkenyl group of 3 to 5 carbons which form a cyclic ring;

R_4 and R_5 which may be the same or different is hydrogen, alkyl of 1 to 4 carbons, $—OR_6$, $—CO_2R_6$, $—COR_6$, —CHO, $—CH_2OR_6$ or together R_4 and R_5 are a butadiene radical which form a benzene ring;

R_6 is hydrogen or alkyl of 1 to 4 carbons; together with a pharmaceutically acceptable carrier.

15. A method for the radiotherapeutic treatment of cancerous tissues in mammals which comprises:

(a) administering to said mammal, in an amount effective to enhance subsequent radiation of cancerous tissue, a radiosensitizing composition as claimed in claim 12; and

(b) subsequently exposing the cancerous tissue to radiation whereby enhanced radiation of the tissue is achieved.

4,494,548
ULTRASONIC SECTOR SCANNER

Georges Buon, Flushing, and Howard Fidel, Hartsdale, both of N.Y., assignors to Biosound, Inc., Indianapolis, Ind.

Filed Apr. 20, 1982, Ser. No. 370,014
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 6 Claims

1. A diagnostic probe comprising:

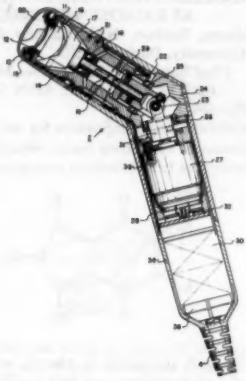
a transducer means for supplying and receiving a diagnostic energy beam,

scanning means for producing a sector scan of said transducer means, said scanning means including a cam means and an input shaft rotatable about a first fixed axis, and cam follower means in contact with said cam means and said transducer means for translating rotation of said cam means into oscillation of said transducer means about a second fixed axis,

drive means for said scanning means including a motor means and Cardon joint, and a driveshaft means connecting said motor means to said Cardon joint, said scanning means input shaft being connected to said Cardon joint and serving as the output shaft therefrom, said driveshaft

means and said input shaft being at a fixed predetermined angle at said joint,

said scanning means cam and cam follower means being adapted to compensate for variations in rotational angular velocity of said scanning means input shaft due to the said predetermined Cardon joint angle whereby a linear relationship is maintained during transducer scanning between the change in transducer means scan angle as defined by the angle formed between the scan axis during



scan motion and the scan axis at a fixed reference orientation, and the change in angle of rotation of said driveshaft means relative to a fixed reference rotational position, whereby linear sector scanning is enacted, and

housing means for providing an enclosure for said transducer means, said scanning means and said drive means while allowing entry and exit of said energy beam and a connection of said diagnostic probe to associated equipment.

4,494,549

DEVICE FOR DIAGNOSING BODY CAVITY INTERIORS WITH SUPERSONIC WAVES

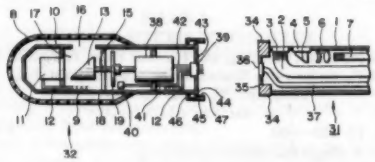
Akihiro Namba, and Mitsugu Sakai, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,924

Claims priority, application Japan, May 21, 1981, 56-77221

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **2 Claims**



1. A device for diagnosing the interior of a body cavity comprising:

an optical endoscope part adapted to be inserted into said body cavity;

a supersonic wave scan head assembly adapted to be inserted into said body cavity and attached distal to said optical endoscope part; and

connecting means arranged on said endoscope part and on said supersonic wave scan head assembly for removably physically and operatively attaching said supersonic wave scan head assembly distal to the end of said endoscope part, a lid part having connecting means thereon adapted for connection to said optical endoscope part whereby said lid part may be removably attached to said endoscope part connecting means when said supersonic wave scan head assembly is detached therefrom, whereby said endoscope part may be used with said supersonic wave scan head assembly attached thereto for both optical observations and supersonic wave diagnosis within a body cavity and may be used within a body cavity for optical observations only with said supersonic wave scan head assembly detached.

4,494,550

MEASURING APPARATUS FOR THE NON-INVASIVE DETECTION OF VENOUS AND ARTERIAL BLOOD FLOW AND DRAINAGE DISORDERS

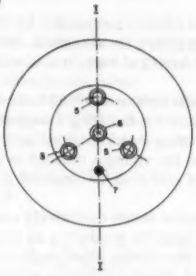
Vladimir Blazek, Butzweide 14, and Volker Wienert, Elsenborn 53, both of D-5100 Aachen, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,507

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1981, 3100610

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—664 **6 Claims**



1. A measuring apparatus for the non-invasive detection of peripheral drainage and blood flow disorders in human extremities, the emptying or filling of blood in the veins or arteries of an extremity being detectable in its timely progress, comprising:

(a) a measuring head adapted to be affixed to the skin of the extremity;

(b) a plurality of radiation sources adapted to emit radiation of the same wave length and mounted in said measuring head spaced from each other for directly contacting the skin, each of said radiation sources being adapted to direct radiation onto a respective area of the skin along a path perpendicular to the skin;

(c) means connected to said radiation sources for modulating said radiation sources;

(d) a radiation receiver mounted in said measuring head spaced from said plurality of radiation sources for directly contacting the skin and adapted for measuring the amount of radiation reflected or dispersed back by the cutaneous vascular plexus at an area of the skin different from said areas of the skin subjected to radiation from said radiation sources;

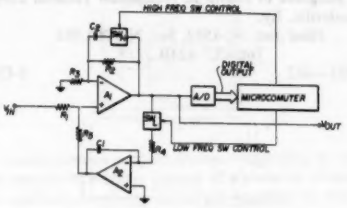
(e) a temperature sensor mounted in said measuring head for directly contacting the skin and measuring the skin temperature simultaneously with the measurement by said radiation receiver of said reflected or dispersed back radiation; and

(f) an electronic evaluation circuit connected to said radiation receiver and to said temperature sensor for selectively detecting and recording the progress of the reflected or dispersed amount of radiation and the skin temperature as functions of time, said electronic evaluation circuit including a low-pass filter with a limit frequency for suppressing interference resulting from modulation of the measured signal from said radiation receiver due to the pulse of blood in the blood vessels of the skin.

4,494,551
ALTERABLE FREQUENCY RESPONSE ELECTROCARDIOGRAPHIC AMPLIFIER

Charles A. Little, III, Palm Bay, and Raymond B. Patterson, III, Melbourne, both of Fla., assignors to Medicomp, Inc., Melbourne, Fla.

Filed Nov. 12, 1982, Ser. No. 441,175
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 **7 Claims**



1. In an electrocardiographic amplifier including amplifying means, detecting means for detecting low frequency noise above a predetermined magnitude, and gain adjusting means responsive to said detecting means for adjusting the low frequency portion of said amplifying means gain by a fixed magnitude to control said noise, the improvement comprising:

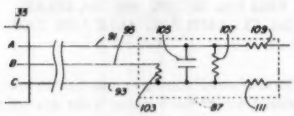
said detecting means detects a plurality of low frequency noises and provides one of a plurality of adjustment signals having a duty cycle as a function of the detected low frequency noise; and

said adjusting means adjusts said low frequency portion of said amplifying means gains to one of a plurality of magnitudes as a function of said adjustment signals, and includes an integrated means connected between the output and the input of said amplifying means in a feedback path and a switch means in series with said integrating means for enabling or disabling said feedback path in response to said adjustment signal to adjust the time constant of said grating means.

4,494,552
PHYSIOLOGICAL MONITORING ELECTRODE SYSTEM

Roger L. Heath, Prospect Heights, Ill., assignor to R2 Corporation, Skokie, Ill.

Division of Ser. No. 176,270, Aug. 8, 1980, Pat. No. 4,419,998. This application Mar. 17, 1983, Ser. No. 476,326
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 **12 Claims**



1. A physiological monitoring electrode system for use with an ECG comprising:

first and second electrode elements to be attached to a patient;

first electrically conducting means connecting said first electrode element to a first input of the ECG;

second electrically conducting means connecting said second electrode to a second input of the ECG;

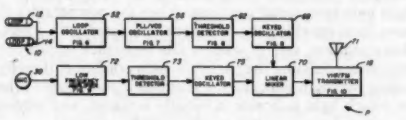
a body tissue impedance simulating circuit connected to said first and second conducting means; and

third electrically conducting means connected from said body tissue impedance simulating circuit to a third input of the ECG, said body tissue impedance circuit providing an impedance between said third conducting means and at least one of said first and second conducting means to give the appearance that the third input of the ECG is connected to a third electrode on the patient, thereby permitting said first and second electrode elements to provide input information to the ECG from the patient that normally requires the use of a minimum of three separate electrodes and the associated leads.

4,494,553
VITAL SIGNS MONITOR

Michael J. Sciarra, Southampton, and Victor L. Cestaro, Farmingville, both of N.Y., assignors to F. William Carr, Houston, Tex.

Filed Apr. 1, 1981, Ser. No. 250,068
Int. Cl.³ A61B 5/08
U.S. Cl. 128—721 **28 Claims**



1. Apparatus for monitoring vital signs in patients, comprising:

(a) transducer means for detecting vital signs of such a patient, said transducer means comprising first and second inductive coil means wherein each coil means comprises a coil whose core area remains constant in size;

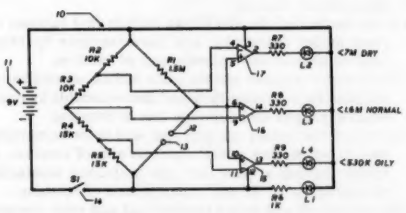
(b) means for mounting said transducer means relative to the patient's thorax whereby said first and second coil means are mounted spaced from each other so that, as the patient's thorax moves on breathing, said first and second coil means move with respect to each other to change the mutual inductance of said first and second coil means in response thereto; and

(c) transmitter means for forming a radio signal which changes according to changes in the mutual inductance of said first and second coil means due to relative movement of said first and second coil means reflecting changes in the patient's breathing.

4,494,554
SKIN TEST DEVICE USING I.C. COMPARATOR CIRCUIT

Helga M. Van Dyke, 469 Wellington Rd., Orange, Calif. 92669, and Rudolph C. DeGroot, Sr., Laguna Niguel, Calif., assignors to Helga M. Van Dyke, Orange, Calif.

Filed Sep. 25, 1981, Ser. No. 305,547
Int. Cl.³ A61B 5/05
U.S. Cl. 128—734 **4 Claims**



1. A portable device for testing skin or scalp resistance to determine an oily, normal and dry skin condition, comprising:

a. a battery driven bridge circuit providing preset, fixed

resistances in a first set of adjacent legs of the bridge circuit;

b. a skin surface probe-touchplate and battery drain resistance in a second set of adjacent legs of the bridge circuit opposed to the first set of legs, the probe-touchplate being adapted to test an area of skin for resistance corresponding to the skin condition;

c. a plurality of I.C. comparators connected in the bridge circuit adapted to turn on and off when comparing with a skin resistance that is equivalent to oily, normal and dry of respectively about: 15K–18K; 30K–35K; and, 42K–50K ohms corresponding to the fixed resistances in the first set of legs of the bridge circuit;

d. light indicators associated with each of the comparators for instantaneous actuation when the associated comparator changes state; and,

e. biasing resistances associated between each comparator and its associated light indicator;

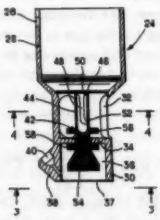
the battery voltage for driving the bridge circuit, comparators and light indicators being about 5–12 volts; whereby: i. the light indicators serially activate when the comparators change state upon equalling the resistance associated with a particular skin condition; and, ii. when a skin resistance occurs between resistances defining the particular skin condition, thereby activating two light indicators, a selection is made based primarily on which light indicator is initially actuated, and secondarily on which light indicator is subsequently actuated.

4,494,555

DISCONNECTIBLE APPARATUS COMPRISING A DOUBLE BAYONET COUPLING

André H. Abrioux, Drancy; Pierre Corcuff, Neuilly sur Marne, and Jean L. Leveque, Le Raincy, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,456
Claims priority, application France, Apr. 8, 1982, 82 06173
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—755 **15 Claims**



1. In a disconnectible apparatus comprising a double bayonet coupling between, on the one hand, a barrel supporting a rotary member, and, on the other hand, an end fitting supporting a rotor, wherein the rotor and the rotary member are intended to rotate, in use, around a common axis of rotation; the improvement wherein:

(a) the barrel and the end fitting include first bayonet coupling means connectible and disconnectible by relative rotation around said common axis of rotation,

(b) the rotary member and the rotor include second bayonet coupling means connectible and disconnectible by relative rotation around said common axis of rotation;

(c) one of said rotary member and said rotor comprising a spindle whose axis is the common axis of rotation, said spindle having at least one pin projecting substantially perpendicular to the said common axis of rotation;

(d) the other of said rotary member and said rotor comprises a sleeve coaxial with said common axis of rotation, and having a free end edge to receive said spindle; and

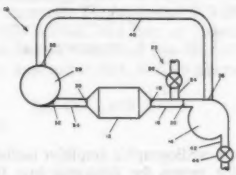
(e) said second bayonet coupling means include said spindle and said sleeve and further include a slot means comprising a first slot portion substantially parallel to said common axis of rotation and opening out at said free end edge of the sleeve, and a second slot portion joined to said first slot portion and inclined in relation to said common axis of rotation and in relation to a plane perpendicular to said common axis of rotation.

4,494,556

PNEUMATIC CONVEYING TOBACCO DRYING APPARATUS

Dan T. Wu, Jeffersontown, and Kevin R. Korte, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 24, 1982, Ser. No. 391,882
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—302 **6 Claims**



1. An apparatus for drying tobacco particles comprising:

heater means for heating tobacco drying and conveying gas passing therethrough;

a short duration tobacco-gas separator device located downstream of said heater means;

first duct means fluidly interconnecting the hot tobacco drying and conveying gas outlet of said heater means and the entrance of said separator device for establishing gas flow communication therebetween;

tobacco solids feed means located at the entrance of said separator device for introducing tobacco particles to be dried into the apparatus at the entrance of the separator device so that simultaneous drying of tobacco solids and separation of tobacco solids from said drying gas occur in said separation device;

gas moving means located upstream of the gas inlet of said heater means and in gas flow communication with the gas inlet of said heater means; and

second duct means establishing gas flow communication between the gas outlet of said separator device and the gas inlet of said gas moving means for recirculating the gas separated from said tobacco particles in said separator device back to said gas moving means.

4,494,557

METHOD OF CONDITIONING HAIR

Gerald D. Nagel, 6404 W. North Ave., Wauwatosa, Wis. 53213

Filed Sep. 20, 1982, Ser. No. 419,836
Int. Cl.³ A45D *7/00*; A61K *7/09, 7/06*
U.S. Cl. 132—7 **8 Claims**

I claim:

1. In a method of conditioning human hair to provide a long lasting permanent wave which includes the steps of applying a permanent wave solution to the hair to shape the hair followed by applying a neutralizer solution to the hair to neutralize the effect of the permanent wave solution and reconstitute the hair, the improvement comprising the steps of:

applying a reforming mixture to the hair after the hair has been shaped but prior to applying the neutralizer solution, said reforming mixture consisting essentially of magnesium sulfate, water and a reconstructor solution and having a magnesium sulfate to reconstructor weight ratio within the range of from about 0.7 to 1 to about 2.7 to 1 and a water to reconstructor weight ratio within the range of from about 1 to 1 to about 3.5 to 1; and

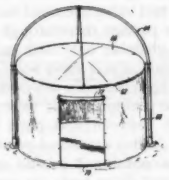
heating the hair for between about 15 to about 25 minutes after applying the reforming mixture but prior to applying the neutralizer solution.

4,494,558

ENCLOSURE AND FRAME THEREFOR

Raymond E. Fidler, Jr., P.O. Box 876, Port Aransas, Tex. 783

Filed Sep. 29, 1982, Ser. No. 427,956
Int. Cl.³ A45F 1/00
U.S. Cl. 135—102 8 Claims



1. A multi-purpose support frame, comprising in combination an upright arch frame formed of a plurality of elongated, flexible resilient members connected together in end-to-end relationship,

said members being disposed in a common vertical plane,

a ring frame formed of a plurality of elongated flexible resilient members connected together in end-to-end relationship, and lying in a common plane,

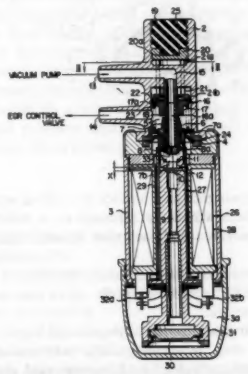
said ring frame being disposed within said arch frame, and mounted to said arch frame at opposite positions on said ring frame for slidable movement along said arch frame and for pivotal movement of said ring frame about an axis through said opposite positions providing for angular positioning of said ring frame within said arch frame, said ring frame members lying in a common plane at all angular positions of said ring frame.

4,494,559

NEGATIVE PRESSURE CONTROL APPARATUS

Setuo Kawamura, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 7, 1983, Ser. No. 464,136
Claims priority, application Japan, Feb. 10, 1982, 57-17508[U]
Int. Cl.³ G05D 16/06
U.S. Cl. 137—116.5 6 Claims



1. A negative pressure control apparatus comprising:

a first housing defining a negative pressure chamber therein;

an inlet port which is arranged at said first housing and is adapted to be coupled to a vacuum source;

an outlet port which is arranged at said first housing, communicates with said negative pressure chamber, and supplies a controlled negative pressure;

a second housing defining an atmospheric pressure chamber kept at the atmospheric pressure therein;

a diaphragm which is interposed between said atmospheric and negative pressure chambers and is adapted to deform in accordance with a difference between the atmospheric and negative pressures in said atmospheric and negative pressure chambers;

a valve case of a magnetic material, which defines therein a communication channel for communicating said atmospheric and negative pressure chambers having a valve hole opening to said atmospheric pressure chamber and is supported by said diaphragm;

a tubular body which defines therein a negative pressure channel communicating with said inlet port, is inserted in said communication channel of said valve case, is supported to be movable along said communication channel, and has an opening open to said communication channel of said valve case;

a valve plug which is adapted to open/close said opening of said tubular body and said valve hole of said valve case;

means, urging said valve plug to said valve case and to said tubular body, for closing at least one of said opening of said tubular body and said valve hole of said valve case;

an electromagnet which is arranged inside said second housing and which attracts said valve case together with said valve plug which has closed said valve hole of said valve case so as to open said opening of said tubular body and to communicate said inlet port with said negative pressure chamber through said negative pressure and communication channel, at which time the negative pressure in said negative pressure chamber is decreased to cause said diaphragm to deform toward said negative pressure chamber causing said valve case to move so that said opening of said tubular body is closed again by said valve plug and said valve hole of said valve case is opened, thereby communicating said negative pressure chamber with said atmospheric pressure chamber through said communication channel so as to increase the negative pressure in said negative pressure chamber and to deform said diaphragm toward said atmospheric pressure chamber; and

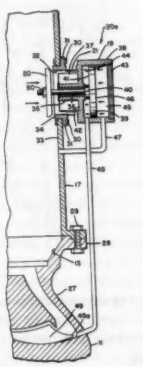
adjusting means for moving said tubular body so as to control the movement of said valve case which is caused by deformation of said diaphragm and attraction of said electromagnet.

4,494,560

SELF-PRIMING SYSTEM FOR LIQUID PUMPS

Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.

Filed Dec. 9, 1982, Ser. No. 448,258
Int. Cl.³ F01B 25/00
U.S. Cl. 137—117 9 Claims



1. In a self-priming pump system for a vertical pump having an inlet and an outlet, a suction chamber for the liquid to be

pumped, the suction chamber being in communication with the pump inlet, a discharge line connected to the pump outlet, a check valve positioned in the discharge line downstream of the pump outlet a distance sufficient to provide a column of priming liquid for priming the pump upon loss of suction at the pump inlet, and a priming valve having an inlet in communication with the discharge line and an outlet in communication with the suction chamber and positioned in the discharge line between the pump outlet and the check valve, the priming valve responsive to liquid flow from the pump to automatically permit flow of the priming column of liquid from the discharge line to the suction chamber under predetermined flow conditions, the improvement comprising:

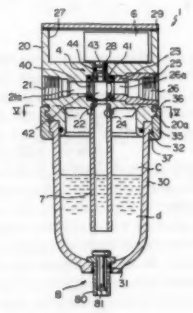
said priming valve having a valve member and a valve seat positioned adjacent an opening in said discharge line to permit flow therethrough when said valve member is spaced from said valve seat, and to prevent flow therethrough when said valve member is against said valve seat, said valve member having an area exposed to the static fluid pressure in said discharge line, a piston connected to and spaced from said valve member, a cylinder connected to said valve body outwardly of said discharge column to slidably receive said piston, said piston having a first face and a second face, a conduit extending from the discharge of said pump to said cylinder to convey pump discharge dynamic pressure to said first face of said piston, a conduit extending from said discharge line to said cylinder to convey discharge line static pressure to said second face of said piston, whereby upon normal operation of said pump the liquid static pressure acting on said valve member and the liquid dynamic pressure acting on said first face of said piston are sufficient to maintain said valve in the closed position, and upon cessation of flow through said pump when the pump discharge dynamic pressure is diminished because of loss of pump suction, the force of the liquid static pressure against said second face of said piston is greater than the force of the liquid static pressure against said valve member to cause said valve to open and thereby permit the liquid in said discharge column to flow to the pump suction chamber and prime the pump.

4,494,561

CONDENSATE DISCHARGING APPARATUS

Yoshinari Ogasawara, Aichi, Japan, assignor to CKD Corporation, Komaki, Japan

Filed Sep. 30, 1982, Ser. No. 431,078
Claims priority, application Japan, Nov. 25, 1981, 56-188943
Int. Cl.³ F16T *1/00*
U.S. Cl. 137—204 **6 Claims**



1. A drain discharging apparatus for connection to a place in which condensate in compressed air accumulates, such as the bottom of a compressed air tank, an air conduit or the like, said apparatus comprising:

a housing having a body therein with an inlet port for connection to said place, an outlet port and a valve chest therein, and having a motor chamber in the upper part thereof;

a vessel;

a connector ring removably attaching said vessel to the lower portion of said body, said body and said vessel together defining a condensate reservoir chamber and said valve chest opening into said reservoir chamber;

a rotary valve in said valve chest and including a valve body having a valve passage therethrough for communicating said reservoir chamber only with said inlet port in one rotational position of said valve body and communicating said reservoir chamber only with said outlet port in another rotational position of said valve body and blocking communication between said ports and said reservoir chamber in all further rotational positions thereof;

an electric motor positioned in said motor chamber and connected to said valve body for continuously rotating said valve body around the axis thereof; and

a tube attached to the lower portion of said housing around said opening of said valve chest and within said reservoir chamber and extending between said valve chest and the lower portion of said reservoir chamber for conducting condensate collected in the lower portion of said reservoir chamber to said valve chest,

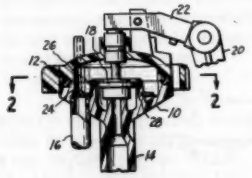
whereby said rotary valve connects said reservoir chamber with said inlet port and to said outlet port alternately while not connecting said inlet and outlet ports to each other simultaneously, and the condensate accumulated in said place is introduced into said reservoir chamber while said valve port communicates said reservoir chamber with said inlet port and is discharged from said reservoir chamber by the pressure accumulated therein only when said valve port communicates said reservoir chamber with said outlet port.

4,494,562

FLOAT VALVE SYSTEM FLOW PROPORTIONING DEVICE

James B. Stephens, La Crescenta, Calif., assignor to Coast Foundry & Manufacturing Company, Pomona, Calif.

Filed Jun. 14, 1983, Ser. No. 504,293
Int. Cl.³ F16K *47/00, 31/22*
U.S. Cl. 137—436 **5 Claims**



1. A flow proportioning control device for a float system to supply water to a tank which is released to a toilet bowl through a discharge valve, said float valve system comprising:

a supply line;

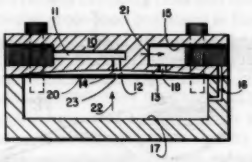
a water level responsive valve and valve seat; a valve barrier extending above and surrounding the valve seat and said water level valve; and

a tank refill line being positioned adjacent said barrier and a rigid restrictor ring interchangeably surrounding and engaging an outer surface of said barrier; said restrictor ring engaging and overlying the upper surface of the refill line; said ring being so proportioned and arranged to partially obstruct the flow from said supply line to said tank refill line thereby providing means to attain a preselected proportional flow to said tank refill line, said restrictor ring being interchangeable from one size to another size for selectively varying the proportion of water which flows to said tank refill line.

4,494,563
FLUID SAFETY VALVE

James F. N. Seiler, Jr., Frederick, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 12, 1982, Ser. No. 441,311
Int. Cl.³ F16K *31/36, 17/00*
U.S. Cl. 137—496 **1 Claim**



1. A safety valve for protecting apparatus from abrupt fluid pressure loss in a fluid system by damping the effects of the pressure loss comprising:

a member having a conduit chamber formed therein and a primary chamber formed therein, said conduit chamber having a shallow conically concave shape, said primary chamber being aligned with and having a configuration that essentially matches the corresponding configuration of said conduit chamber,

said member having a fluid inlet formed therein and a port also formed therein, said port being coincident with the apex of said conical conduit chamber in order to establish fluid communication between said fluid inlet and said conduit chamber,

said member also having an expansion conduit and a discharge port formed therein, said discharge port establishing fluid communication between said expansion conduit and said conduit chamber at the periphery of said conduit chamber and said expansion conduit having a substantially larger volume than said fluid inlet,

said member having a bypass conduit formed therein, said bypass conduit establishing fluid communication between said expansion conduit and primary chamber, and

a flexible membrane separating said conduit chamber from said primary chamber in order to respond to relatively higher fluid pressure in said primary chamber by closing said port at said conduit chamber apex, thereby to terminate temporarily fluid pressure loss in at least a portion of the fluid system, said flexible membrane having an aperture formed therein in alignment with said port at said conduit chamber apex to enable the fluid pressure in said primary chamber, said bypass conduit and said expansion conduit to gradually become equal with said fluid inlet fluid pressure and thus to protect the apparatus from abrupt fluid pressure loss.

4,494,564
FLAP VALVE

Stephen A. Lukacz, Nazareth, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Mar. 11, 1983, Ser. No. 474,368
Int. Cl.³ F16K *15/03*
U.S. Cl. 137—527.6 **12 Claims**

1. A flap valve adapted for use in selectively closing an open ended material conduit comprising:

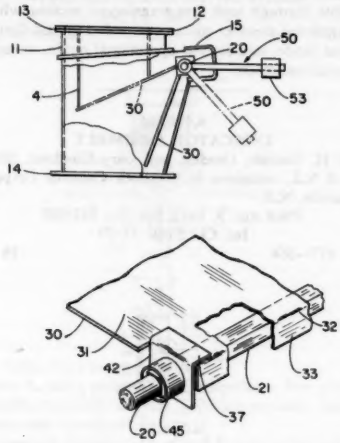
a shaft adapted to be rotatably mounted in a fixture;

a flap having a surface adapted to selectively close a material conduit and having one end engaging said shaft;

a dog mounted on said shaft and having a leg lying atop said one end of said flap;

said dog being keyed to said shaft whereby when a force is applied to the surface of said flap which selectively closes the conduit, said force is transmitted through said dog to said shaft to tend to rotate said shaft about its own axis to open said material conduit;

said one end of said flap being bent at an angle to the surface



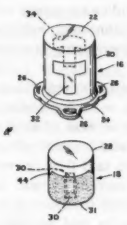
which selectively closes the conduit for preventing said flap from moving in one direction relative to said shaft; and

spacer means positioned between said dog and said fixture.

4,494,565
INDICATOR ASSEMBLY

Franklin H. Sinclair, Oradell, and Gary Glockner, Hillsdale, both of N.J., assignors to Westlock Controls Corporation, Moonachie, N.J.

Continuation-in-part of Ser. No. 367,038, Apr. 9, 1982,. This application Feb. 28, 1983, Ser. No. 470,464
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—555 **6 Claims**



1. An indicator assembly visually indicating operational settings of a valve having a plurality of at least three flow-through ports, said valve including a rotatable operational member for selectively placing said valve in a first operational mode, a second operational mode or a third operational mode, said indicator assembly being comprised of:

an indicator member comprised of first and second surface sections, said first surface section being provided with an indicator means having a shaped configuration portions of which are selectively referenced to said first operational mode, said second operational mode and said third operational mode, said indicator member being rotatable by said operational member of said valve; and

a housing member having an elongated chamber within which said indicator member is positioned for axial rotation, said housing member including a first translucent

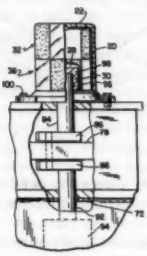
section having a shaped configuration representing graphically said plurality of at least three flow-through ports, portions of said indicator means included in said first surface section of said indicator member being selectively visible through said first translucent section when said operational member places said valve in said first operational mode, said second operational mode, or said third operational mode.

4,494,566

INDICATOR ASSEMBLY

Franklin H. Sinclair, Oradell, and Gary Glockner, Hillsdale, both of N.J., assignors to Westlock Controls Corporation, Moonachie, N.J.

Filed Apr. 9, 1982, Ser. No. 367,038
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—556 **16 Claims**



1. An indicator assembly visual indicating operational setting of a fluid handling apparatus having a first operational position and a second operational position and provided with an operational member for placing said fluid handling apparatus in said operational positions, which comprises:

an indicator member comprised of a first and second surface sections, said first surface section being provided with a first indicator means referenced to said first operational position and said second surface section being provided with a second indicator means referenced to said second operational position, said indicator member being connected to said operational member of said fluid handling apparatus; and

a housing member including a translucent section and an indicator section mounted about said indicator member, said first surface section of said indicator member being visible through said translucent section when said operational member in said first operational position and said second surface section of said indicator member being visible through said translucent section when said operational member is in said second position, said indicator section of said housing member being provided with an indicator means to visually cooperate with one of said indicator means of said indicator member to indicate an operational position of said fluid handling apparatus.

4,494,567

APPARATUS FOR SUPPLYING A FLOW OF LIQUID TO A TURBINE

Harry D. Troyen, 351 N. 5th St., Reading, Pa. 19601

Filed Apr. 8, 1983, Ser. No. 483,147
Int. Cl.³ F03B *13/10*
U.S. Cl. 137—561 A **4 Claims**

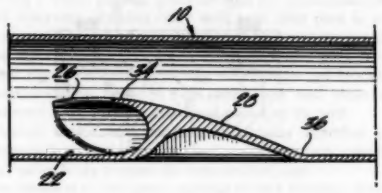
1. Apparatus for supplying a flow of liquid to a turbine from a source of liquid flowing at a variable rate, comprising:

a main conduit for receiving a variable flow of liquid from said source;

a branch conduit connected to said main conduit for supplying a flow of said liquid from said main conduit to said turbine;

said branch conduit being of smaller cross-section than said main conduit and communicating with the interior of said main conduit by way of an opening in a side wall of said main conduit; and

stationary flow-diverter means inside said main conduit extending across the bottom of said main conduit from the



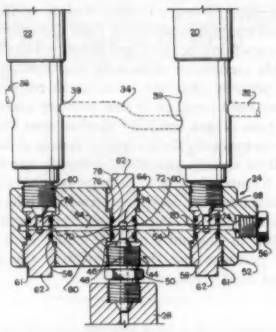
downstream side of said opening and extending short of the top of the interior of said main conduit, for diverting substantially all of said variable flow of liquid into said branch conduit by way of said side wall opening when the rate of flow of said liquid is less than a predetermined value for which the level of said liquid is at the top of said diverter, and for permitting excess of said liquid to flow over said flow-diverter means and down said main conduit when said rate of flow exceeds said predetermined value.

4,494,568

HIGH PRESSURE SENSOR BASE

Terry G. Young, Longview, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 26, 1983, Ser. No. 526,732
Int. Cl.³ F15B *13/02*; F16K *17/00, 37/00*
U.S. Cl. 137—561 A **8 Claims**



1. An apparatus for receiving at least one component having an autoclave connector with an autoclave end surface and having a flow passage therein in communication with the autoclave end surface, which comprises:

a manifold having a longitudinal passage therein in communication with a fluid pressure source and having a lateral bore extending therethrough and intersecting the longitudinal passage, the lateral bore having internally threaded portions at the opposite ends thereof adjacent the outer surfaces of the manifold such that one end of the lateral bore threadably receives the autoclave connector of the component;

a cylindrical plug having an externally threaded end portion which is threadably received in the other end of the lateral bore opposite the end receiving the component, the plug

further having a reciprocal autoclave connector on the other end of the plug with a reciprocal autoclave end surface facing the autoclave end surface of the component so that upon rotation of either the plug or component establishing contact between the respective autoclave end surfaces a high pressure metal-to-metal seal is obtained, the plug including a peripheral annular groove intermediate the externally threaded portion and the autoclave end surface and a radially extending cross port communicating with the annular groove and positioned in fluid communication with the longitudinal passage of the manifold, and further including an axial bore intersecting the cross port and opening to the autoclave end surface of the plug to provide fluid communication from the fluid pressure surface, through the manifold and plug of the apparatus, to the flow passage of the component thereby providing a metal-to-metal autoclave connection which is readily obtainable at a preselected rotation orientation of the component relative to the apparatus; and

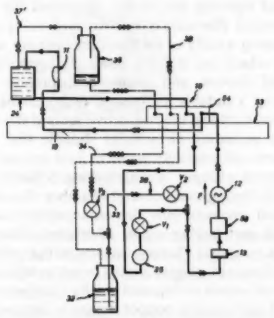
sealing means provided on the plug on opposite sides of the annular groove for sealing between the plug and the lateral bore so that pressurized fluid in the longitudinal passage of the manifold or cross port of the plug is unable to communicate with the threaded portions of the lateral bore or exteriorly of the apparatus.

4,494,569

APPARATUS FOR CIRCULATING AND REGENERATING A DEGRADABLE SOLUTION SUCH AS A SATURABLE ABSORBER FOR A LASER

Luc Tagnon, Saint-Mande, and Georges Wajs, Ivry, both of France, assignors to Essilor International Cie General d'Optique, Cretell, France

Filed Apr. 22, 1983, Ser. No. 487,873
Claims priority, application France, Apr. 22, 1982, 82 06937
Int. Cl.³ E03B 7/07
U.S. Cl. 137—563 **14 Claims**



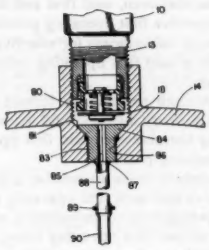
1. Apparatus for circulating and regenerating a degradable solution such as a saturable absorber for a laser, said apparatus comprising a first, circulation circuit including, in series, a cell adapted to contain the solution, a pump for pumping the solution and a second regeneration circuit carrying fresh, concentrated solution, flow control means for injecting said fresh concentrated solution into said circulation circuit, said second, regeneration circuit comprising a main tank for containing said fresh concentrated solution and an auxiliary tank defining a sump tank or collector vessel for collecting degraded solution from said circulation circuit.

4,494,570

LP GAS SAFETY VALVE

Charles H. Adkins, 251 N. Elm, Hagerstown, Ind. 47346

Filed Mar. 4, 1983, Ser. No. 472,128
Int. Cl.³ B67B 7/24
U.S. Cl. 137—590 **20 Claims**



1. A valve for a tank comprising:

a valve housing with an inlet, an outlet, a first passage extending therebetween and a closure movably mounted to open and close said passage;

an extension threadedly mounted to said outlet and extendable into said tank;

a tube attached to said extension and extending into said tank;

an insert positioned in said outlet of said housing and having a second passage extending therethrough with a valve seat provided thereon;

a rod slidably mounted to said insert and having an enlarged head sealingly seatable upon said valve seat to close said second passage; and,

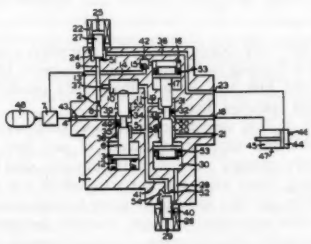
spring means operable to bias said head away from said seat in an open position to allow fluid flow from said second passage into said tube but yieldable to allow said head to move to a closed position to seat on said valve seat when said closure inlet is below a predetermined level.

4,494,571

ELECTROPNEUMATIC DOOR CONTROL VALVE

Gunter Seegers, West Bloomfield, Mich.; Günter Sebesta, Hemmingen, and Alfred Klatt, Wathlingen, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 439,701
Int. Cl.³ F15B 13/043
U.S. Cl. 137—596.16 **8 Claims**



1. An electropneumatic door control valve for controlling a flow of compressed air from a compressed air source to at least one of an opening and closing chamber of a pneumatic door drive where the door drive includes an emergency cock for tripping a pilot valve to divert the compressed air, which comprises:

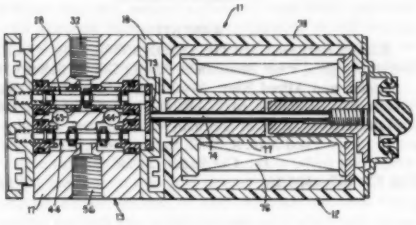
(a) a housing having a primary inlet and a first and second control outlet;
(b) first and second operating valves located within said housing, each of said operating valves having a first and a second operating position;
(c) a first through passageway formed in said housing between said primary inlet and said first control outlet and including therebetween, said first and second operating valves in respective first operating positions;
(d) a first solenoid valve means for selectively communicating the outlet of said first operating valve to said second control outlet;
(e) a second through passageway formed in said housing between said primary inlet and said second control outlet and including therebetween said first operating valve in such first operating position;
(f) a second solenoid valve means for urging said second operating valve into such first operating position;
(g) a throttled passageway communicating said primary inlet to the outlet of said first operating valve;
(h) a secondary inlet communicating with the pilot valve and being effective when the pilot valve has diverted such compressed air from said primary inlet to said secondary inlet;
(i) a first and second piston spool located in and forming a part of respective said first and second operating valves;
(j) a double check valve for allowing the higher of two pressures between said second through passageway and said secondary operating valve; and
(k) a biasing means for urging said first piston spool of said first operating valve into the second operating position.

4,494,572

FOUR-WAY POPPET VALVE ASSEMBLY

Stanley M. Loveless, Oshtemo Township, Kalamazoo County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed Sep. 30, 1982, Ser. No. 430,077
Int. Cl.³ F15B *13/02*
U.S. Cl. 137—596.17 **6 Claims**



1. A four-way, poppet-type valve assembly, comprising:
a valve housing including a main one-piece body portion having first and second substantially parallel and elongated openings therein;
a pair of first sleeves sealingly and stationarily disposed within the opposite axial ends of said first opening in axially opposed and spaced relationship, said first sleeves having inner axial end surfaces which are disposed in axially opposed and axially spaced relationship from one another and define a central chamber therebetween, said pair of first sleeves having coaxially aligned bores of a first substantially uniform diameter extending therethrough and defining a pair of end chambers which communicate with opposite sides of said central chamber;
the axially inner end surface of each said first sleeves defining thereon a first annular valve seat which is of a generally conical configuration and projects axially outwardly toward the valve seat formed on the other of said first sleeves, each of said valve seats having a sealing diameter which only slightly exceeds said first diameter;
first elongated valve plunger means disposed within and supported for shiftable axial movement along said first opening, said first plunger means including a central part having first elastomeric poppet means mounted thereon in encircling relationship thereto and disposed within the central chamber of said first opening, said first plunger means also having end parts which are disposed on opposite axial sides of the central part and project through the respective end chambers, and annular elastomeric sealing means creating a slidable and sealed relationship between each said end part and a respective said first sleeve for sealingly closing the outer end of the respective end chamber, said annular elastomeric sealing means defining an annular sealing area which is substantially of said first diameter and which permits relative axial sliding but sealed engagement between said first sleeve and said end part of said first plunger means;
a pair of second sleeves stationarily and sealingly seated within opposite ends of said second opening in axially opposed and spaced relationship, said second sleeves having coaxially aligned bores extending therethrough of a second diameter;
wall means stationarily positioned with respect to said body portion substantially centrally of said second opening, said second opening having a central portion which is substantially of said second diameter and extends through said wall means in coaxial alignment with the bores of said second sleeves, said wall means being disposed axially between but axially spaced from the inner axial ends of said second sleeves so as to define a pair of end chambers which are disposed on opposite sides of said wall means and are joined together by a central chamber as defined by said central portion of said second opening;
said wall means defining a pair of second annular valve seats on opposite axial sides thereof in surrounding relationship to the opposite axial ends of said central portion, each said second valve seat being of a conical configuration which projects axially outwardly toward the inner axial end of the respectively adjacent second sleeve and has a sealing diameter which only slightly exceeds said second diameter;
second elongated valve plunger means disposed within said second opening and being supported for shiftable axial movement therealong, said second valve plunger means extending axially of said second opening and having end parts which are slidably sealingly supported within said second sleeves, and annular elastomeric sealing means creating a slidable and sealed engagement between each said end part and the respective second sleeve, said sealing means including an annular slidable seal area having a diameter substantially equal to said second diameter;
said second plunger means having a central part which extends through said central chamber of said second opening and projects into the adjacent end chambers, said central part having a pair of second elastomeric poppet means mounted thereon in encircling relationship, said pair of second poppet means being axially spaced so that said wall means is disposed axially therebetween, whereby one of said second poppet means is disposed within each of said end chambers and is disposed for engagement with the respectively adjacent second valve seat;
each of said poppet means comprising an elastomeric ring member which stationarily surrounds the respective valve plunger means and has effective outer and inner diameters which respectively are greater than and less than the diameter of the respective valve seat so that the latter sealingly contacts the central annular part of the axial end face of the elastomeric ring member when the latter is sealingly engaged therewith;
said body portion having an inlet passage formed therein and communicating directly with the central chamber of said first opening for permitting pressure fluid to be supplied

thereto, and an outlet passage formed therein and communicating directly with the central chamber of said second opening for permitting said fluid to be suitably discharged;

a first load port formed in said body portion and disposed in continuous communication with one end chamber of each of said first and second openings, and a second load port formed in said body portion in continuous communication with the other end chamber of each of said first and second openings; and

operator means coupled to said first and second valve plunger means for effecting simultaneous linear shifting thereof between two end operational positions;

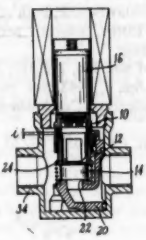
whereby the presence of pressurized fluid within the central chamber of said first opening or within any of said end chambers creates only a minimal unbalanced pressure force acting on the respective poppet means for holding it in its closed position.

4,494,573

ELECTROVALVE

Francois Berte, Le Pecq, France, assignor to Société Anonyme des Etablissements Jouvenel et Cordier, Rueil-Malmaison, France

Filed May 19, 1982, Ser. No. 379,992
Claims priority, application France, Jun. 24, 1981, 81 12373
Int. Cl.³ F16K *11/04, 31/06, 27/00*
U.S. Cl. 137—625.5 **5 Claims**



1. An electrovalve comprising:

a core;

a single valve member;

first and second interlockable elements interlocked together, said first interlockable element being rigidly connected to said core, and said second interlockable element carrying said valve member;

two identical superimposable parts superimposed together and receiving therebetween said interlocked elements and said valve member, said two superimposed parts having therein channels, and said two superimposed parts having respective valve seats to be selectively contacted by said valve member, thereby opening or closing selected said channels; and

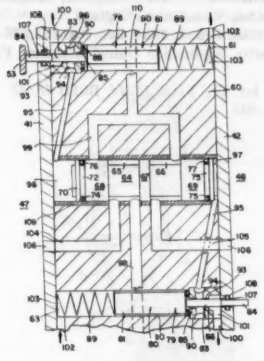
a valve body having fitted therein an assembly including said superimposed parts receiving therebetween said interlocked elements and said valve member, said valve body having therein plural ports adapted to be connected to selected said channels.

4,494,574

VALVE ARRANGEMENT FOR AN AIR-OPERATED DIAPHRAGM PUMP

Joseph C. Casilli, Waldwick; Lawrence Gibson, Dumont, and William D. Hessler, Wyckoff, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,944
Int. Cl.³ F16K *1/00*
U.S. Cl. 137—625.6 **3 Claims**



1. A switching valve assembly for use in a diaphragm pump including a movable wall, comprising

a casing bounding a bore and a duct that opens into said bore at a predetermined region of the latter;

an annular element stationarily mounted in said bore at said region to subdivide said bore into two compartments one of which is closer to the movable wall than the other, and including an axially extending central passage connecting said compartments and a substantially radial-passage that opens into said central passage at a zone of the latter intermediate said compartments and communicates with said duct;

means for discharging fluid from said one compartment to maintain the pressure therein substantially at a relatively low level;

means for admitting pressurized fluid into said other compartment to maintain the pressure therein at a relatively high level;

an elongated valve member received in said bore for movement axially of the latter between a first and a second end position and including a guiding portion slidingly contacting the surface circumferentially bounding said other compartment of said bore and an actuating portion axially adjoining said guiding portion and extending therefrom into and through said central passage of said annular element and beyond the same into said one compartment and into the path of movement of the movable wall at least in said first end position of said valve member, said actuating portion passing through said central passage with a larger first clearance between said other compartment and said zone, and with a smaller second clearance between said zone and said one compartment, for said second clearance to act as a throttling location;

means for biasing said valve member toward said first end position thereof for the valve member to be moved by the movable wall against the action of said biasing means toward said second end position thereof; and

an annular sealing element interposed between said annular element and said guiding portion of said valve member around said actuating portion of said valve member and operative for interrupting communication between said other compartment and said central passage in said first end position of said valve member so that the pressure in said radial passage and in said duct is relieved through said

throttling location, and for establishing such communication as said valve member is moved toward said second end position thereof with resulting flow of said pressurized fluid through said first clearance into, and pressure build-up in, said radial passage and said duct.

4,494,575

GRAVITY DUMP VALVE

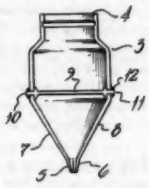
Robert S. Gladstone, Newbury, England, assignor to Coopers Filters Limited, Manchester, England

Filed Feb. 1, 1983, Ser. No. 462,975

Claims priority, application United Kingdom, Feb. 13, 1982, 8204267

Int. Cl.³ F16K *15/14*; B01D *46/48*

U.S. Cl. 137—846 2 Claims



1. A gravity dump valve for an air cleaner comprising an unreinforced, tubular elastomeric body having an inlet and and outlet spaced apart from the inlet, the outlet being in the form of a tapered body portion terminating in discharge lips which are normally closed and a rigid bracing strut extending across the inside of the valve in the tubular body at or adjacent the region where the tubular elastomeric body commences to taper towards the lips.

4,494,576

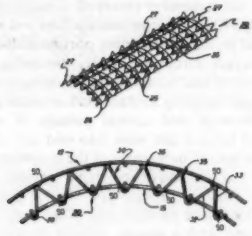
REINFORCING SYSTEM FOR CONCRETE PIPE

Robert C. Buttner, Syracuse, N.Y., assignor to Concrete Pipe & Products Corp., E. Syracuse, N.Y.

Continuation-in-part of Ser. No. 381,222, May 29, 1982, abandoned. This application Jul. 7, 1983, Ser. No. 511,485

Int. Cl.³ F16L *55/00*; B21F *27/20*

U.S. Cl. 138—175 5 Claims



1. In a concrete pipe that is subjected to high external loads at the crown and the invert which produce a compressive stress on one side of the neutral axis of the pipe and a tensile stress on the other side thereof, reinforcing apparatus for transmitting stresses from one side of the neutral axis to the other that includes

an inner cylindrical wire cage mounted inside the neutral axis of the pipe,

arcuate shaped wire mats joined to the inner cage at both the crown and invert,

each of said mats having a series of spaced apart curved wires that complement the curvature of the inner cage and which are circumferentially disposed in the pipe to place each end of the mat in a region of compressive stress thereby anchoring the ends of the curved wires in compression, and a series of spaced apart longitudinally extended wires cojoined to the curved wires,

a series of curved circumferentially disposed wire truss members woven at intervals into each mat, each truss member having a series of end to end upraised V-shaped sections connected by nodes and antinodes, each of the said antinodes being looped under a separate longitudinal mat wire and being joined to a curved wire of said cage, each node passing upwardly in a radial direction across the neutral axis of the pipe whereby stresses produced on one side of the pipe are translated to the other side of the axis along the entire length of the bridge.

4. Apparatus for reinforcing a concrete pipe that includes

a series of stiff spaced apart curved wires that complement the curvature of a pipe and which are cojoined by a series of spaced apart longitudinally disposed tie wires to from an open mesh arcuate shaped mat, and

a series of circumferentially extended wire truss members woven into the arcuate shaped mat at longitudinally spaced intervals, each truss member having a series of upraised V-shaped sections, the legs of which form included angles of about 60° at the nodes and the antinodes, each antinode being looped around a longitudinal tie wire and being cojoined to said longitudinal tie wire to form a truss bridge extending across the circumferential length of the mat.

4,494,577

WEFT INSERTING DEVICE FOR JET LOOMS

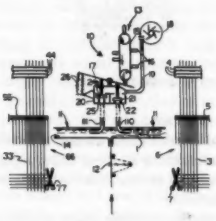
Vladimir Svat, and Ladislav Sevcik, both of Liberec, Czechoslovakia, assignors to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 275,217, Jun. 19, 1981,. This application Feb. 8, 1983, Ser. No. 464,992

Claims priority, application Czechoslovakia, Jun. 24, 1980, 4451-80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—20 6 Claims



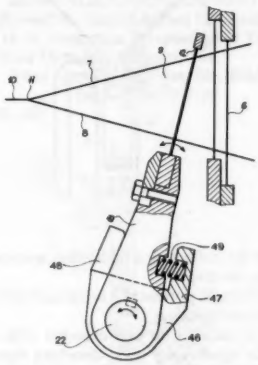
1. Apparatus for the insertion of weft yarns into two spaced sheds of a jet loom with weft change, comprising a stationary weft yarn impelling jet, said jet having two outlets cooperating with the respective sheds, two pressure air supplies for directing pressure air in the jet toward the respective outlets thereof, means for introducing weft yarns into the jet to be selectively acted upon by the respective air supplies, and means for supplying pressure air alternately to the respective air supplies according to a predetermined program, whereby to impel yarns in a selected shed of the loom.

4,494,578

WEFT BEAT-UP MECHANISM FOR LOOMS

Miloslav Cech; Adolf Slezak, both of Bruno, and Vladimir Vasicek, Moravsky Krumlov, all of Czechoslovakia, assignors to Zvs Vyzkumnevyvojovy ustav, koncernova, Brno, Czechoslovakia

Filed Mar. 29, 1983, Ser. No. 479,946
Claims priority, application Czechoslovakia, Mar. 29, 1982, 2152-82
Int. Cl.³ D03D *49/68*
U.S. Cl. 139—188 A 6 Claims



4. In a weft beat-up mechanism for a loom, said mechanism including a positively driven oscillatable active member mounted on the loom, a reed mounted on the active member for beating up the weft to the front end of the fabric in the beat-up position of the active member, the improvement where the reed is mounted on a carrier, and comprising means mounting the carrier on the active member to permit swinging of the carrier to a limited extent about a pivotal axis with respect to the active member, the pivotal axis being parallel to the axis of the beaten-up weft, and yieldable means acting between the carrier and the active member for constantly urging the carrier and the reed thereon forwardly on the loom with respect to the active member, whereby to prolong the time during which the reed acts upon the inserted weft in the beat-up position of the active member, the carrier for the reed being swingably mounted on the swingable shaft which mounts the active member, said active member being provided with two arms between which the carrier is mounted, and the resilient means being mounted between one arm and the carrier, while the other arm forms a limiting stop for the swinging motion of the carrier with respect to the active member.

4,494,579

THREAD CLAMP, PARTICULARLY FOR JET LOOMS

Gilles Grandvallet, and Albert H. Deborde, both of Bourgoin Jallieu, France, assignors to Saurer Diederichs Societe Anonyme, Bourgoin Jallieu, France

Filed Nov. 8, 1983, Ser. No. 549,930
Claims priority, application France, Nov. 8, 1982, 82 1904
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—429 12 Claims

1. A thread clamp for temporarily arresting a weft yarn in a jet loom, comprising:

a housing with an apertured front wall;

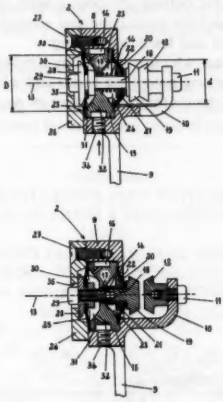
a stationary insert in said housing having a throughgoing passage substantially perpendicular to said front wall;

a deformable first membrane in said housing defining with a front surface of said insert a first chamber adjacent said front wall;

a deformable second membrane in said housing defining with a rear surface of said insert a second chamber remote from said front wall, said second membrane having a mobile portion wider than a mobile portion of said first membrane, said chambers communicating with each other through said passage;

a stem traversing said passage with clearance while being fixedly secured to both said membranes, said stem projecting beyond said front wall and terminating in a movable jaw;

a fixed jaw secured to said housing and confronting said movable jaw for contact therewith in a forward position of said stem in which said first and said second chamber respectively have a maximum and a minimum volume;



spring means coupled with said stem for biasing same toward said forward position thereof;

conduit means in said housing opening into said second chamber; and

control means for selectively connecting said conduit means to a source of high-pressure air and to the atmosphere, admission of high-pressure air to said second chamber by way of said conduit means generating a pressure differential moving said stem into a retracted position against the force of said spring means.

4,494,580

METHOD AND MACHINE FOR CUTTING ELECTRIC LEADS OF SPECIFIC LENGTH AND FOR PROCESSING AND EQUIPPING THE TWO ENDS OF THESE LEADS

Désiré Loustau, Aix-en-Provence, France, assignor to Automatismes Et Techniques Advancees, La Barque, France

Filed Sep. 22, 1982, Ser. No. 421,317
Claims priority, application France, Sep. 24, 1981, 81 18181
Int. Cl.³ B21F *27/00*
U.S. Cl. 140—1 7 Claims

1. Method for cutting off leads of discrete lengths from a wire and processing and equipping the two ends of said leads comprising:

paying out the wire in a rectilinear direction;

forming loops of specific length in the wire through the following steps;

closing onto the wire a forward clamping device of a pair of clamping devices born by a circular transfer conveyor the periphery of which is tangential to the direction of paying out of the wire;

advancing said circular transfer conveyor by a length equal to the distance between the two clamping devices of said pair at the same time as the wire is paid out;

stopping the transfer conveyor;

causing a pressor roller to drive the wire against a driving roller driven by a motor.

unwinding a length of wire corresponding to the desired

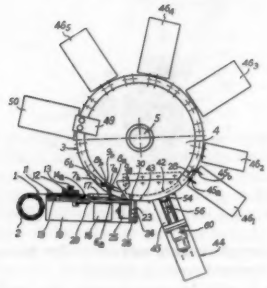
length of a loop and then closing the second clamping device of said pair on said wire;

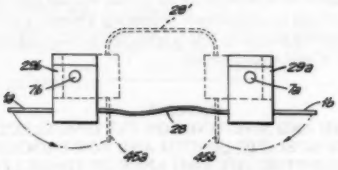
advancing said circular conveyor and said loops held by said clamping devices to a cutting station which cuts said wire between two loops;

and pivoting by a quarter of revolution in reverse direction from one another, the two clamping devices of each pair after said cutting station in order to bring the two free ends of each wire lead to be presented transversely to the periphery of said circular conveyor and to extend beyond said periphery.

5. Machine for cutting off from a wire, leads of predetermined length and for processing and equipping automatically the two ends of said leads comprising:

a circular plate which is rotated by a motor-reduction gear unit comprising a stepping motor and which bears pairs of closet-set clamps distributed over its periphery;





a paying out station for said wire which is tangential to the periphery of said circular plate;

a driving-roller driven by a motor which is situated to the forward end of said paying-out station and a presser roller which urges said wire against said driving roller to form loops;

a cutting station for said wire situated radially to said circular plate forward of said paying-out station, wherein each clamp is pivotally mounted around a vertical axial and comprises a radical arm which is held applied by a torsional spring against a stop and which bears a roller and said machine comprises two cams which are situated above said circular plate and said rollers of said clamps become supported against said cams which cause said clamp to pivot in reverse direction from one another.

4,494,581

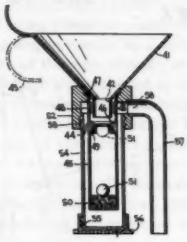
ISOLATION OF FORESTREAM AND MIDSTREAM PORTIONS OF COLLECTED URINE SAMPLES

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Filed Feb. 18, 1983, Ser. No. 467,905

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—1 **25 Claims**



24. A method for collecting a midstream specimen of void urine comprising the steps of:

directing a forestream portion of a urine void into a chamber through an inlet opening;

absorbing urine received in said chamber with a material which swells significantly upon absorbing liquid;

forcefully closing said inlet opening of said chamber under the impetus of the swelling of said material; and

directing a subsequent portion of said urine void into a midstream specimen container after said inlet opening is closed.

4,494,582

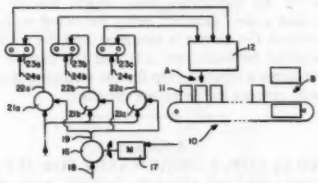
ICE CREAM MAKING AND PACKAGING SYSTEM AND METHOD

Jerome K. Meyer, West Valley City, Utah, assignor to Safeway Stores, Incorporated, Oakland, Calif.

Filed Apr. 5, 1983, Ser. No. 482,150

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—9 **7 Claims**



5. A continuous method for the manufacture of packaged ice cream comprising the following steps:

(a) Continuously mixing air in a controlled amount with an unfrozen ice cream mix,

(b) Continuously delivering the mix to a freezing unit of the continuous type whereby it is incorporated in the mix to produce ice cream with overrun,

(c) Continually discharging equal volumes of ice cream into packaging containers,

(d) Continually conveying the containers through a weighing station,

(e) Weighing the filled containers as they are conveyed through the weighing station and deriving an underweight signal when a predetermined number comprising a group of containers is underweight and an overweight signal when such group is overweight, the durations of the

signals being in accordance with the amount of overweight or underweight of the group, and

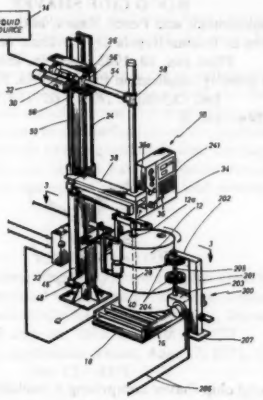
(f) Automatically adjusting the amount of air supplied to the mix responsive to the said underweight or overweight signal, the amount of air incorporated in the mix being increased responsive to overweight signals and decreased responsive to underweight signals whereby the weights of the filled containers are brought to target weight.

4,494,583

BUNG ALIGNMENT APPARATUS

Robert H. Reeves, Jr., Angleton; Don G. Chandler, Lake Jackson, and H. A. Jorgensen, Freeport, all of Tex., assignors to Velasco Scale Company, Freeport, Tex.

Filed May 16, 1983, Ser. No. 494,579
Int. Cl.³ B65B *3/28*
U.S. Cl. 141—83 **21 Claims**



21. In liquid filling apparatus adapted for subsurface filling of containers, said apparatus including: a conduit for introducing liquid into a container, said conduit being movable between a raised and a lowered position; a valve to control the rate of flow of liquid through the conduit to said container; a first signal generator for generating a signal to initiate movement of the conduit from its raised position to its lowered position; a second signal generator actuable by movement of the conduit toward its lowered position, for generating a signal to actuate the valve to commence flow of liquid at a slow fill rate into said container; a delay mechanism actuable by the signal from the second signal generator to trigger a fast fill rate dispensation of liquid after a predetermined interval; a weight responsive device adapted to generate a first and a second control signal when the weight of the liquid in the container equals a first and a second cut-off weight, respectively, said first control signal being operable to initiate withdrawal of the conduit towards its raised position and to actuate the valve to return to a slow fill rate of dispensation of liquid through the conduit; a wiper device for urging liquid adhering to the outside of the conduit toward said container during withdrawal of the conduit; and a third signal generator actuable when the conduit has been raised a predetermined distance from such a container for generating a signal to stop further movement of the conduit; said second control signal, which is generated when the second cut-off weight of liquid within such a container is achieved, initiates the termination of flow of liquid from the conduit and a movement of the conduit to its raised position, the improvement which comprises:

a driven roller and two nondriven rollers, each having a vertical central axis, positioned to restrict said container's lateral motion during the rotating and filling operation, the nondriven rollers being movable between a position contiguous to the surface of the container and a retracted position permitting the container to be removed and a subsequent container to be positioned;

an infrared sensor, movable in cooperation with said nondriven rollers between (a) a functional position above the level of the top of the container and in linear alignment with the raised liquid conduit and (b) a retracted position permitting movement of the conduit;

means for retracting said nondriven rollers and said infrared sensor;

control means (a) to measure the instantaneous intensity of the infrared radiation detected by said sensor, and (b) to detect changes in such intensity taking place when the bung of the empty container passes directly beneath said sensor; and

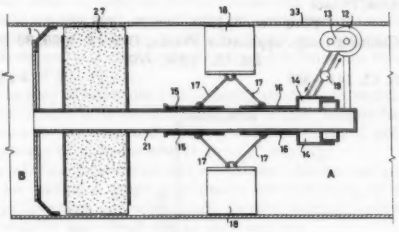
means for controlling the rotation of said container such that when said infrared sensor indicates that the bung is aligned directly beneath the conduit a signal is generated which terminates the rotational drive of the driven rollers.

4,494,584

DEVICE FOR FILLING A PIPE WITH FLUIDS, FOR EMPTYING FLUIDS FROM A PIPE AND FOR DRYING A PIPE

Antonio Rognoni, Via Faruffini, 11, Pavia, Italy

Filed Nov. 30, 1982, Ser. No. 445,741
Claims priority, application Italy, Dec. 2, 1981, 44017 A/81
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **8 Claims**



1. A device for emptying a fluid from a pipe and for simultaneously filling the pipe with another fluid while preventing the fluids from mixing, comprising:

a support member having a head end for insertion in the pipe for emptying a fluid from the pipe;

a sealing means attached to the head end of said support member so that when the device is inserted in the pipe the sealing means presses against the inner walls of the pipe thereby preventing the fluid being emptied from the pipe from mixing with the fluid filling the pipe, and

a braking means attached to said support member for slowing the movement of the fluid filling the pipe thereby causing the pressure of the filling fluid to be greater than the pressure of the emptying fluid to produce a braking action that increases as the velocity of the filling fluid increases.

4,494,585

FUNNEL HAVING A PRIMARY VENT AND AN AUXILIARY VENT/SIPHON

Donald E. Waldecker, P.O. Box 3342, Falls Church, Va. 22046

Filed Feb. 4, 1983, Ser. No. 463,915
Int. Cl.³ B65B *3/04*; B67C *11/00*
U.S. Cl. 141—98 **15 Claims**

1. A funnel comprising a hollow conical portion having a large, rimmed, mouth end and a small outlet end adapted to receive a fluent material to be dispensed, said funnel including an outlet pipe rigidly secured to the outlet end of said hollow

conical portion, said outlet pipe having a longitudinal axis which is at an angle relative to the axis of symmetry of said conical portion, said funnel including a coupling member adapted to be detachably coupled to the fill opening of a container to be filled by said funnel, said coupling member having

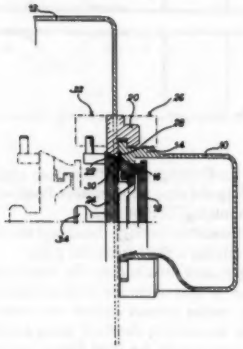
a passage therethrough receiving said outlet pipe, said funnel being rotatable relative to said coupling member about the longitudinal axis of said outlet pipe so as to permit adjustment of the filling position of said conical funnel portion relative to the container to be filled.

4,494,586

SAFETY DEVICE FOR A LOCKING AND OPENING SYSTEM

Claude Picard, Nanterre, France, assignor to La Calhene, Bezons, France

Filed Dec. 8, 1981, Ser. No. 328,537
Claims priority, application France, Dec. 16, 1980, 80 26669
Int. Cl.³ E05C *7/06*
U.S. Cl. 141—384 **4 Claims**



1. In a locking system (26) between a first and a second enclosure, each of said enclosures comprising a flange (14, 20) defining an opening normally sealed by a door (18), said system comprising a locking ring (36) mounted on an outer periphery of the flange (26) of said first enclosure and rotatable between an inoperative position when said second enclosure is absent and a bolting position locking the second enclosure on the first enclosure, and an operating lever mounted on the flange of said first enclosure and movable between a locking position and an unlocking position of the door of said first enclosure, a safety device comprising

a first locking mechanism (80) carried by the flange (20) of said first enclosure and normally locking the locking ring in said inoperative position and in said bolting position,

a second locking mechanism (82) carried by the flange (20) of the first enclosure and normally locking the operating lever in said locking position,

first detection means (72) carried by the locking ring (36) and sensitive to the presence of the second enclosure (10) for unlocking said first locking mechanism,

second detection means (74) carried by the flange (20) of the first enclosure on the outside of said first enclosure (72) and sensitive to the presence of the locking ring in said bolting position for unlocking said second locking mechanism,

third detection means (76) carried by the flange (20) of the first enclosure (12) within said first enclosure and sensitive to the presence of the operating lever in said locking position and

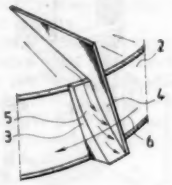
fourth detection means (78) carried by the flange (20) of the first enclosure (12) within said first enclosure and sensitive to the presence of the door of the first enclosure for unlocking said first locking mechanism.

4,494,587

WOOD CHIP SHAVER

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy Lovilsan Tehtaat, Finland

Filed Jan. 10, 1983, Ser. No. 456,743
Claims priority, application Finland, Jan. 12, 1982, 820098
Int. Cl.³ B02C *18/00*; B27C *1/00*
U.S. Cl. 144—162 R **4 Claims**



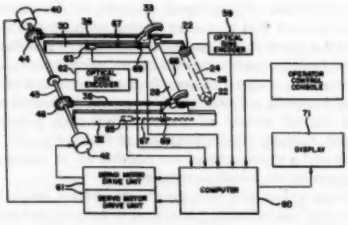
1. A wood chip shaver comprising a rotatable rotor, a plurality of circumferential cutting blades disposed on a circle around the outside of said rotor, a plurality of chip guide members each having a vane thereon carried on the circumference of said rotor, said chip guide members being disposed immediately adjacent to said blades, and shaped for guiding and urging wood chips against the blades, each chip guide member being provided in front of its respective vane with a wedge-shaped guide surface inclined toward the blades in the direction of travel of the chips, whereby the chips are guided in between said surface and the blades.

4,494,588

VENEER LATHE

Larry R. Berry, and Anton S. Richert, both of Roseburg, Oreg., assignors to Sun Studs, Inc., Roseburg, Oreg.

Filed Apr. 22, 1983, Ser. No. 487,584
Int. Cl.³ B27L *5/04*
U.S. Cl. 144—209 R **4 Claims**



1. A veneer lathe, comprising:

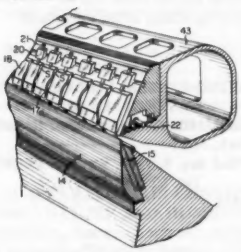
(a) spindle means, defining a spindle axis, for rotating a block about said spindle axis while veneer is cut from said block;
(b) way means, located fixedly and extending generally transversely with respect to said spindle axis, for supporting a main feed carriage;
(c) a main feed carriage movably supported on said way means for movement therealong transversely toward and away from said spindle axis;
(d) main feed carriage position sensor means for sensing the position of said main feed carriage on said way means with respect to said spindle axis;
(e) main feed carriage position indicator means remote from said main feed carriage position sensor means and responsive thereto for indicating the position of said main feed carriage;
(f) spindle rotation measuring means for determining the amount of rotation of said spindle means and providing an indication thereof at a location remote from said spindle means;
(g) motor means for moving said main feed carriage along said way means tranversely toward and away from said spindle axis; and
(h) automatic means responsive to said indications of the position of said main feed carriage and the amount of rotation of said spindle means, for controlling said motor means in response to said indication of the position of said main feed carriage to move said main feed carriage on said way means by an amount having a predetermined relationship to the amount of rotation of said spindle means.

4,494,589

VENEER LATHE

Yoshimitsu Kajikawa; Keinosuke Souma; Kohei Ogaki; Tadashi Uzuka, and Yoshihiko Minato, all of Hakodate, Japan, assignors to Uroko Seisakusho Co., Ltd., Hakodate, Japan

Filed Aug. 16, 1982, Ser. No. 408,172
Claims priority, application Japan, Aug. 17, 1981, 56-129867
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—213 **5 Claims**



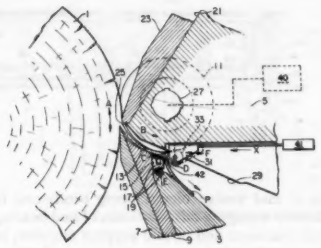
1. A motor driven veneer lathe for peeling a veneer from a log, comprising:
(a) knife means having a cutting edge for peeling said veneer from said log;
(b) a plurality of pressure bars mounted on a pressure bar frame and spaced thereon at constant intervals, wherein each of said pressure bars exerts pressure on said log through a leading edge parallel to the cutting edge of said knife means;
(c) a plurality of circular discs, each having a smooth circumference, and each interposed between two of said pressure bars, retained in position by said pressure bar frame through the medium of a drive shaft;
(d) means for moving said pressure bar frame toward the center of said log while said veneer is peeled; and
(e) means for exerting a substantially constant pressure on said log through said circular discs, wherein said exerting means is independent of said moving means.

4,494,590

VENEER LATHE

Yoshimitsu Kajikawa; Keinosuke Souma; Kohei Ogaki; Tadashi Uzuka, and Yoshihiko Minato, all of Hakodate, Japan, assignors to Uroko Seisakusho Co., Ltd., Hakodate, Japan

Filed Sep. 30, 1982, Ser. No. 430,500
Claims priority, application Japan, Oct. 27, 1981, 56-171876
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—213 **8 Claims**



1. A veneer lathe for peeling veneer from a log, said veneer comprising:
a knife mounted on a knife frame;
a pressure bar frame;
a plurality of spaced pressure bars retained on said pressure bar frame for applying pressure to said log, the portions of said pressure bars nearest said knife being aligned substantially parallel thereto, thereby forming a gap between said knife and said pressure bars, said gap defining the thickness of said veneer;
a plurality of roller discs individually rotatably mounted in the spaces between successive ones of said pressure bars;
means for rotating said roller discs at a peripheral speed greater than the peripheral speed of said log;
a guide face mounted on said knife frame adjacent said knife and having a shape substantially corresponding to the periphery of said roller discs, thereby forming a curved path for said veneer peeled from said log;
a plurality of parallel-mounted, pressure rollers consecutively spaced along said knife frame adjacent said guide face, said pressure rollers continuing said path provided by said guide face and exerting forces on said veneer in a direction toward said roller discs; and
a plurality of parallel-mounted guide members mounted on said pressure bar frame and disposed along the path of said veneer after said pressure rollers, said guide members exerting a force on said veneer in a direction substantially perpendicular to the direction of force of said pressure rollers.

4,494,591

TILTING TABLE FOR A WOODWORKING TOOL

Harold E. Folkerth, Dayton, Ohio, assignor to Shopsmith, Inc., Dayton, Ohio

Filed Sep. 14, 1983, Ser. No. 531,978
Int. Cl.³ B25H *1/00*
U.S. Cl. 144—286 A **27 Claims**

20. In a multipurpose woodworking tool of the type having a base frame, rails supported by said base frame, and a headstock slidably mounted on said rails, a tilting table comprising:
a support member vertically adjustably mounted on said rails;
a pair of trunnions attached to said support member to pivot about a common axis;
said support member including bearing surfaces adjacent to each of said trunnions;
said trunnions each including an arcuate bearing surface extending about an outboard periphery thereof, said arcu-

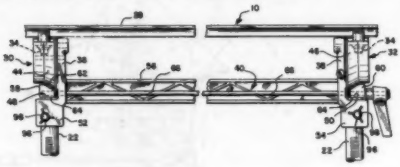
ate bearing surface being frusto-conical in shape and disposed at an angle relative to an associated one of said support member bearing surfaces;

a table top attached to and supported by said trunnions;

a rod slidably and rotatably attached to said support member;

a first wedge block fixedly attached to an end of said rod adjacent to one of said trunnions;

a second wedge block slidably and rotatably attached to said rod adjacent to the other of said trunnions;



each of said wedge blocks being positioned between and slidably engaging different ones of said bearing surfaces of said trunnions and of said support member; and

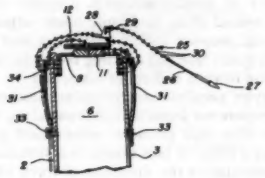
nut means threaded on an opposite end of said rod such that rotation of said nut means drawn said wedge blocks toward each other, thereby wedging each of said blocks between associated ones of said arcuate bearing surfaces of said trunnions and said support member bearing surfaces to prevent pivotal movement of said trunnions and table top.

4,494,592

MAILING BAG WITH ADDRESS MOUNTING POCKET AND TAMPER PROOF TIE SECURING MEANS ATTACHABLE TO CARD AND SLIDE ZIPPER PREVENTING SURREPTITIOUS ACCESS THEREINTO

Cletus D. Bonner, Beaver, Pa., assignor to Strayer Coin Bag Co. Inc., New Brighton, Pa.

Filed May 3, 1983, Ser. No. 476,356
Int. Cl.³ A45C *13/00*
U.S. Cl. 383—5 **4 Claims**



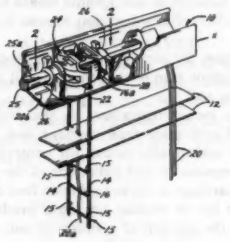
1. A bag for carrying mail or the like comprising two overlying panels of similar size and shape secured along their two peripheral sides and bottom edges to form a main pocket therebetween, said top edges being unsecured to provide a mouth, a slide fastener connected to said panels along said top edges for opening and closing said main pocket mouth, a transparent card pocket, an address card removably inserted within said pocket and being apertured at its upper end, patch means alinedly secured along their side and bottom edges to each of said panels with their upper edges being unsecured and apertured, said patch means generally underlying said card pocket and projecting thereabove and terminating below said slide fastener when in mouth closing position. Finger grip means hinged to said slide fastener and formed with an aperture in one end, and plastic tie seal means including a flexible rod tipped at one end and formed with a hollow truncated cone at its other end and having a plurality of spaced bead means therebetween, whereby when said seal means is inserted through said card, patch and finger grip apertures and said tipped end is threaded through said cone the seal means may be tightened relative to and for retaining said slide fastener in closed locked position and preventing the disengagement of said address card and whereby unauthorized entry into said bag necessitates severing said tie seal means thereby leaving overt evidence thereof.

4,494,593

VENETIAN BLIND ASSEMBLY WITH IMPROVED LADDER SUPPORTING TILT DRUMS

William V. B. Fielder, Jr., Westminister, Md., assignor to Roper Corporation, Kankakee, Ill.

Filed Apr. 1, 1983, Ser. No. 481,288
Int. Cl.³ E06B *9/322, 9/326*
U.S. Cl. 160—177 **20 Claims**



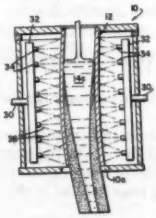
1. In a venetian blind assembly having a plurality of slats pivotably supported by flexible ladders, said ladders each having a pair of side cords with a plurality of slat supporting rungs connected between said side cords at vertically spaced junction nodes, a head rail rotatably supporting a tilt shaft, and a plurality of tilt drums mounted on said shaft for supporting said ladders, wherein the improvement comprises: said tilt drums each having a one piece body with integrally formed means cooperating with the nodes of the uppermost rung of the ladder for indexing the nodes in relatively precise predetermined positions on the tilt drum and for securing the ladder in such position during tilting drum movement.

4,494,594

SPRAY COOLING SYSTEM FOR CONTINUOUS STEEL CASTING MACHINE

Cass R. Kurzinski, Milford, Pa., assignor to AMB Technology, Inc., New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,999
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—443 **16 Claims**



1. A continuous casting machine for casting metals whose melting point temperature is in excess of about 2,600° F., comprising: a frame having a top and a bottom; a vertically oriented mold tube positioned in and secured to the top of said frame; and spray means including a plurality of spray nozzles spaced around said mold tube for directing sprays of water against the exterior surface of the mold tube to cool molten

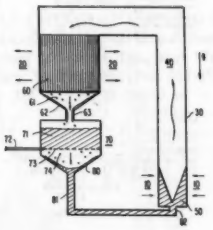
metal therein; said spray means and spray nozzles being constructed and arranged to cause said sprays of water upon exit from the spray nozzles to have a gauge pressure in the range of from about 40 pounds per square inch to about 150 pounds per square inch and to have an included spray angle of up to about 110°; and said spray nozzles being spaced up to about six inches from the mold tube and from each other a predetermined distance such that adjacent sprays of water, where they strike the mold tube, do not overlap each other more than about one inch and are not spaced from each other more than about one inch, whereby the sprays of water dissipate any barrier or layer of steam which tends to form around said mold tube and at the same time effect cooling of the molten metal in the mold tube.

4,494,595

TEMPERATURE-CONTROLLABLE HEAT VALVE

Lawrence A. Schmid, 12 Maplewood Ct., Greenbelt, Md. 20770

Filed Nov. 30, 1983, Ser. No. 556,480
Int. Cl.³ F28F *13/00*
U.S. Cl. 165—1 **18 Claims**



1. In the method of transferring heat by the evaporation of a working fluid in an evaporator and the condensing of the resulting vapor in a condenser to form condensate, the direction of heat flow being from the evaporator to the condenser, and the condensate being returned to the evaporator, the improvement for controlling the amount of heat flow comprising the steps of:

interrupting the return flow of condensate to produce droplets of condensate, and

controlling the temperature at the point of droplet production to control the rate of droplet production and, thus, the rate at which condensate is returned to the evaporator.

4,494,596

METHOD AND APPARATUS FOR CONDITIONING AIR TEMPERATURE AND HUMIDITY

Norman F. Bradshaw, Surrey, England, assignor to Haden Schweitzer Corporation, Madison Heights, Mich.

Division of Ser. No. 150,537, May 16, 1980, Pat. No. 4,367,787. This application Sep. 29, 1982, Ser. No. 434,077
Int. Cl.³ F24F *3/14*
U.S. Cl. 165—20 **6 Claims**

1. An air conditioning system comprising:

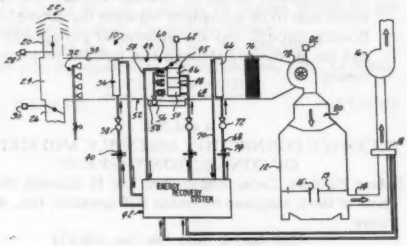
duct means having an upstream portion and a downstream portion and adapted for carrying a stream of air therethrough;

multi-section heat exchange means in said duct means mediate said upstream and downstream portions, said multi-section heat exchange means including a plurality of independently controllable sections arranged in parallel across said duct means to receive and treat respective portions of an air stream flowing in said duct means;

a plurality of banks of spray nozzles for humidifying said air stream and disposed across said duct means upstream of said multi-section heat exchange means, each said bank being operatively associated with a different section of said heat exchange means;

valve means operatively connected to said nozzles for independently controlling the operation thereof whereby humidification may occur in at least one of said banks independently of humidification in the other of said banks;

by-pass means arranged in said duct means and in parallel with said multi-section heat exchange means for controllably conveying therein a portion of said air stream around said multi-section heat exchange means whereby said



conveyed portion receives neither heat exchange treatment nor humidification; and

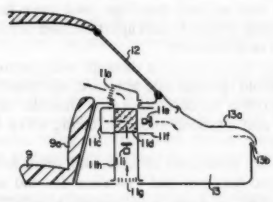
all of the portions of said air stream being remixed at said downstream portion of said duct means to provide an air stream, the qualities of which vary in degree according to the amount of treatment and humidification afforded by said apparatus and the portions of said air stream flowing through and around said heat exchange means.

4,494,597

VENTILATING DEVICE FOR AUTOMOTIVE VEHICLE

Akira Fukami; Kunio Okamoto, both of Okazaki, and Hiroki Noguchi, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 2, 1981, Ser. No. 317,408
Claims priority, application Japan, Nov. 5, 1980, 55-154904; Mar. 10, 1981, 56-33012[U]
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—41 **3 Claims**



1. A ventilating system for an automotive vehicle which includes a trunk compartment, separated from the vehicle compartment by rear seats and a rear board and an air conditioning device mounted in a front portion of the vehicle, said system including a ventilating device mounted in a rear portion of the vehicle below said rear board for effecting ventilation between the air in a vehicle compartment and the atmospheric air outside the vehicle,

atmospheric air passageway means for conducting atmospheric air from outside of said vehicle to said ventilation device and into the rear portion of said vehicle compartment so that such air is directed toward the front portion thereof; said atmospheric air passageway means including an outlet port located substantially at the center of the rear board as viewed in the lateral direction of the vehicle and opened toward the front portion of the vehicle;

internal air passageway means provided in a manner to cross atmospheric air passageway means for conducting air in

the rear portion of said vehicle compartment out of said vehicle compartment and into said trunk compartment and means for exhausting such air thereafter to the outside of said vehicle, said internal air passageway means including an inlet port located at both lateral end portions of the rear board; and

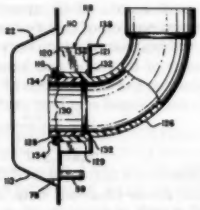
heat exchanger means mounted at the crossing portion of said atmospheric air passageway means and said internal air passageway means for causing both sensible heat and latent heat to be exchanged between the atmospheric air flowing through said atmospheric air passageway means and the air flowing through said internal air passageway means.

4,494,598

FLUE PIPE CONNECTION ASSEMBLY AND METHOD OF CONNECTION THEREOF

Robert DeHaan, Cedar Rapids, and Lee D. Gisvold, Norway, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 6, 1983, Ser. No. 456,171
Int. Cl.³ F28F 9/06
U.S. Cl. 165—47 **9 Claims**



1. In combination:

a recuperative heat exchanger for extracting heat from flue gases, said exchanger having a metallic exhaust manifold having a flat sheet wall with a circular aperture;

a bracket having an external connection to said flat sheet wall, said bracket defining a plate parallelly spaced from said wall of said manifold, said plate having a circular opening coaxial to said aperture, said opening being larger than said aperture;

a plastic pipe extending through said opening and into said manifold through said aperture, said pipe having an annular protrusion defining a first shoulder facing said manifold and a second shoulder facing away from said manifold;

an O-ring positioned around said pipe, said O-ring being pressed between said first shoulder and said wall of said manifold to form a substantially airtight seal therebetween; and

a bifurcated retainer removably inserted between said second shoulder and said plate, said retainer engaging said second shoulder to prevent motion of said pipe away from said manifold.

9. The method of connecting a plastic flue pipe to a flat sheet metal wall of a manifold of a recuperative heat exchanger of a residential furnace, comprising the steps of:

inserting said plastic flue pipe through a first circular aperture in a bracket plate externally connected to and parallelly spaced from said wall of said manifold and through a second circular aperture in said wall, said first and second apertures being coaxial, said pipe having an annular protrusion having a circumference larger than said second aperture but smaller than said first aperture, said protrusion defining a first shoulder facing said manifold and a second shoulder facing away from said manifold;

pressing said pipe inwardly towards said manifold to compress an elastic O-ring between said first shoulder and said wall of said manifold to form an airtight seal; and

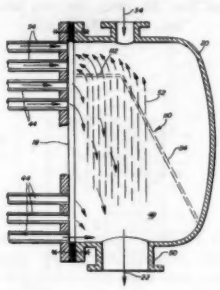
inserting a bifurcated retainer between said plate and said surface of said manifold, said retainer engaging said second shoulder to prevent movement of said pipe in a direction perpendicular away from said manifold.

4,494,599

VACUUM PRODUCING CONDENSER

Walter Kals, Hastings-on-Hudson, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 491,594, May 4, 1983, which is a continuation-in-part of Ser. No. 324,785, Nov. 25, 1981, abandoned. This application May 18, 1984, Ser. No. 611,613
Int. Cl.³ F28F 9/00
U.S. Cl. 165—67 **8 Claims**



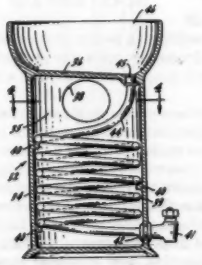
1. In a condenser for vapors containing noncondensible gases, a shell having a generally horizontal condenser chamber with condenser tubes therein, means for directing water downwardly onto the condenser tubes, a basin mounted to the bottom of said shell beneath said condenser chamber for collecting said water directed onto said condenser tubes, and support means engaging the bottom of said shell for supporting the shell, said support means being spaced outwardly from the sides of said basin to permit access to said basin sides for servicing purposes.

4,494,600

PORTABLE QUICK CHILLING AND HEATING APPLIANCE

Bruce E. DeLau, 7111 Marshall Ave., Hammond, Ind. 46323

Division of Ser. No. 241,677, Mar. 9, 1981, Pat. No. 4,407,356. This application Aug. 25, 1983, Ser. No. 526,392
Int. Cl.³ F28D 7/02
U.S. Cl. 165—132 **2 Claims**



1. A portable quick chilling and heating appliance for beverages and the like comprising, in combination,

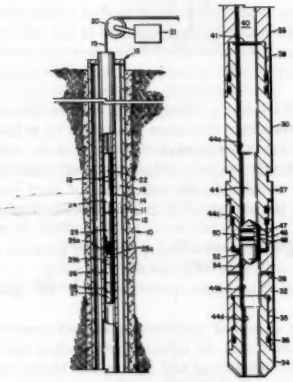
(a) a generally cylindrical container having a fluid tight lower section and a non-fluid tight upper section;
(b) a coil of metallic tubing having an upper end portion and a lower end portion, said coil being housed within the lower section of said container in spaced relation with the inner peripheral wall thereof;
(c) said upper end portion terminating in an intake;
(d) said lower end portion terminating in an outlet;
(e) a cover having a concave upper face and defining a closure for the upper section of said container;
(f) means defining a fluid reservoir in said concave upper face of said cover having an inner diameter at least as great as the inner diameter of said container and also having a lowest point;
(g) means defining a fluid-tight connection between the lowest point of said reservoir and said upper end portion of said coil;
(h) an upwardly extending wall in the upper section of said container situated above said coil; and
(i) means defining at least one aperture in said upwardly extending wall above said coil for loading ice or a heating medium into said container.

4,494,601

DOWNHOLE CHEMICAL CUTTING TOOL

Donna K. Pratt, and Jamie B. Terrell, both of Fort Worth, Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Sep. 14, 1981, Ser. No. 301,675
Int. Cl.³ E21B *29/02*
U.S. Cl. 166—55 **19 Claims**



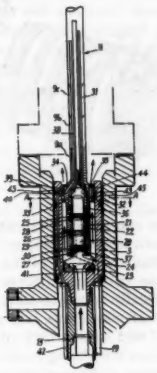
1. In a downhole chemical fluid jet cutting tool for cutting downhole tubular goods, the combination comprising:
(a) an elongated tool body adapted for insertion into a well-bore;
(b) anchoring means in said tool body, said anchoring means being actuatable between a deployed position in response to the application of fluid pressure and a retracted position in response to the release of said fluid pressure;
(c) a chemical section in said tool body having a chamber therein adapted to receive a cutting fluid;
(d) a cutting section in said tool body having a longitudinally extending bore in fluid communication with said chemical section at the rear of said cutting section and in fluid communication with the exterior of said tool body at the front of said cutting section;
(e) at least one cutting port at an intermediate location in said cutting section extending transversely from said bore to the exterior of said tool body;
(f) a piston formed of a relatively malleable material slidably disposed in said bore at a first position between said port and said chemical section; and
(g) a reduced section in said bore in front of said port dimensioned with respect to said piston to receive said piston upon the application of fluid pressure in an interference fit to hold said piston in place at a second location in front of said cutting port, the wall of said reduced bore section being formed of a hard material relative to said piston.

4,494,602

ELECTRICAL CONNECTION DEVICE FOR AN UNDERWATER WELL HEAD

André Capdeboscq, Jurancon, and Jean-Claude Ferry, Haget Aubin, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jan. 10, 1983, Ser. No. 456,995
Claims priority, application France, Jan. 14, 1982, 82 00522
Int. Cl.³ E21B *33/035*
U.S. Cl. 166—65 R **4 Claims**



1. An electrical connection device for an underwater well-head including upper and lower stop-valve devices, hydraulic and production connectors, and supplying a motor driving a deep well pump suspended by tubing from the wellhead, the provision of:
a suspension connector attached to said tubing beneath the lower stop-valve device and in communication with said tubing,
said connector having a cylindrical wall with a top open end and a bottom end having a threaded connection to said tubing;
a male element coaxial with said cylindrical wall, and having a lower end seated in said bottom end of the connector and having a passageway for effluent from said tubing,
said male element being provided with axially spaced annular contacts having leads adapted to be connected to said motor;
a female element having an elongated bell shaped hollow body forming an internal chamber provided with axially spaced internal electrical contacts,
said body coaxially receiving said male element in said chamber for mutual engagement of the electrical contacts thereon,
said body having an outer diameter for a major portion of its length less than the inner diameter of the cylindrical wall of the suspension connector to provide an annular space for passage of effluent through the lower end of the male element from the tubing,
said female element having an enlarged portion sealingly engaged with internal surfaces of the top portion of the cylindrical wall of the suspension connector,
said enlarged portion having openings therein for passage therethrough of effluent,
said female element having an extension portion extending

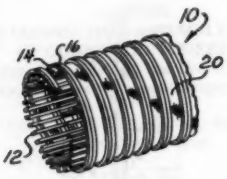
through and above the said stop-valve devices, hydraulic and production connectors associated with said wellhead, said extension portion providing a cylindrical surface against which at least one of said stop-valve devices may seal while communication is maintained with said motor, pump, and suspension connector.

4,494,603

WIRE MESH WELL SCREEN WITH WELDED WIRE SUPPORT

Julian E. Harguindey, Buenos Aires, Argentina, assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 19, 1983, Ser. No. 543,551
Int. Cl.³ E21B *43/08*
U.S. Cl. 166—231 8 Claims



1. A well screen comprising a plurality of longitudinal rods, a strip of wire mesh helically wrapped on the rods at a pitch slightly greater than the width of the strip of mesh so as to define a helical gap between adjacent wraps of said strip, at least one wire helically wrapped about said rods at the same pitch as said strip of wire mesh, said at least one wire being welded to each of said rods at each of its intersections therewith, said at least one wire being positioned in said helical gap so that a first narrow width portion thereof overlies an edge portion of said strip of wire mesh while an adjacent second width portion, which includes the welded intersections with said rods, does not overlie said strip of wire mesh.

4,494,604

EXTRACTION OF ACIDIC MATERIALS FROM ORGANIC LIQUIDS AND USE THEREOF IN ENHANCED OIL RECOVERY

James E. Shaw, and Paul R. Stapp, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1983, Ser. No. 508,640
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 30 Claims

1. A method for extracting acidic materials from an organic liquid containing the same comprising:

contacting at least one organic liquid, selected from the group consisting of (1) organic liquids naturally containing said acidic materials, and (2) organic liquids which have been contacted with an oxidizing agent under conditions sufficient to produce said acidic materials, with an aqueous, polar organic solvent solution of potassium hydroxide in an amount and under conditions sufficient to produce an aqueous phase containing potassium salts of thus extracted acidic materials.

11. A method for recovering oil from a subsurface earth formation containing the same comprising;

(a) contacting at least one organic liquid, selected from group consisting of (1) organic liquids naturally containing said acidic materials, and (2) organic liquids which have been contacted with an oxidizing agent under conditions sufficient to produce said acidic materials, with an aqueous, polar organic solvent solution of potassium hydroxide in an amount and under conditions sufficient to produce an aqueous phase containing potassium salts of the thus extracted acidic materials, and

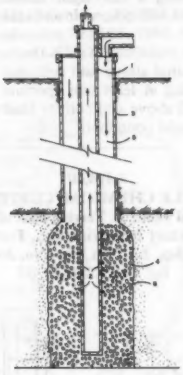
(b) contacting said subsurface earth formation with the thus extracted acidic materials or salts thereof in conjunction with an aqueous displacing medium under conditions to displace said oil.

4,494,605

SAND CONTROL EMPLOYING HALOGENATED, OIL SOLUBLE HYDROCARBONS

John F. Wiechel, Columbus, Ohio; Charles R. French, Bridgeport, and Wilbur L. Hall, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,906
Int. Cl.³ E21B *43/02, 43/04*
U.S. Cl. 166—288 18 Claims



1. A method of treating a subterranean, unconsolidated sand and petroleum containing formation penetrated by at least one well, said well being in fluid communication with the subterranean formation, for the purpose of forming a permeable barrier around the well to restrain the movement of sand particles while permitting the passage of petroleum therethrough, comprising:

(a) introducing a pre-determined quantity of granular material into the well bore adjacent the formation;

(b) introducing bituminous petroleum into the granular material;

(c) introducing an asphalt precipitating solvent consisting of a halogen substituted, oil soluble hydrocarbon having at least one halo substituent and having less than 6 carbon atoms per molecule; and

(d) introducing a heated fluid into the granular material at a temperature of at least 250° F. to solidify the precipitated asphalt.

4,494,606

PROCESS FOR IMPROVING VERTICAL CONFORMANCE IN A NEAR WELL BORE ENVIRONMENT

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

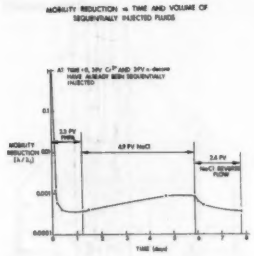
Filed May 19, 1983, Ser. No. 496,349
Int. Cl.³ E21B *33/138, 43/22*
U.S. Cl. 166—295 15 Claims

1. A process for substantially plugging at least one zone of relatively high permeability in a near well bore environment of a subterranean formation penetrated by a well bore in fluid communication therewith, said formation having said at least one zone of relatively high permeability and at least one zone of relatively low permeability, the process comprising the steps of:

(a) injecting an aqueous solution containing an organic poly-

mer capable of being cross linked by a cross-linking agent into said near well bore environment via said well bore;

(b) injecting a hydrocarbon spacer between said solution containing said polymer and an aqueous solution containing said cross-linking agent into said near well bore environment via said well bore in an amount sufficient to delay mixing of said solutions containing said polymer and said cross-linking agent until said solutions are in said near well bore environment;



(c) injecting said solution containing said cross-linking agent into said near well bore environment via said well bore; and

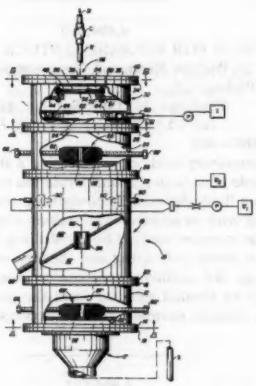
(d) reacting said polymer and said cross-linking agent upon said mixing to form a gel preferentially and predominantly within said at least one zone of relatively high permeability in said near well bore environment, which substantially plugs said at least one zone of relatively high permeability in said near well bore environment.

4,494,607

METHOD OF CLEANING AND INHIBITING SUCKER ROD CORROSION

Michael B. Ford, General Delivery, Vernal, Utah 84078, and Jim B. Griffin, 4518 Graves, Odessa, Tex. 79762

Filed May 9, 1983, Ser. No. 493,029
Int. Cl.³ E21B *19/00*
U.S. Cl. 166—311 **11 Claims**



5. Apparatus for cleaning and inhibiting a string of sucker rod as the string is being removed respective to a borehole, comprising; in combination:

an enclosure and a wellhead, said enclosure having an axial passageway formed therethrough through which said string can pass, means at one end of said enclosure by which the enclosure is removably attached to the wellhead;

means dividing said enclosure into a stripper chamber, a blasting chamber, a cleaning chamber, and a coating chamber; each of the recited chambers include axially aligned passageways formed therethrough which coincide with said axial passageway formed through said enclosure;

said stripper chamber includes first packer means for resiliently engaging a circumferentially extending marginal length of the string to wipe a substantial quantity of foreign material therefrom and thereby clean the outer surface thereof of unwanted material;

said blasting chamber includes means for producing a blast of abrasive material arranged circumferentially about the surface of the string and directed radially inwards towards said surface to clean said surface of unwanted material;

said cleaning chamber includes second packer means for resiliently engaging a circumferentially extending marginal length of said surface to wipe a substantial quantity of foreign material therefrom and thereby clean said surface of unwanted material;

said coating chamber includes means for applying a corrosion inhibitor agent to the cleaned surface as the string is moved along the longitudinal axis thereof and through the chamber whereby;

said string is cleaned and inhibited as the string is brought out of the borehole.

4,494,608

WELL INJECTION SYSTEM

Charles R. Williams; John H. Yonker, both of Carrollton, and Robert L. Thurman, McKinney, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 6, 1982, Ser. No. 447,023
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—317 **23 Claims**

1. A valve connectable in a string of well tools, comprising:

a. a tubular body with a bore therethrough;

b. flow passage means in said body communicating said body bore with the exterior of said body; and

c. sliding sleeve valve means in said body controlling flow through said flow passage means including a downwardly biased piston valve member slidably mounted in and sealingly engaging said body above and below said flow passage means and releasably positioned in up flow passage means closed to flow position by a frangible pin through the body wall below said flow passage means and protruding into a recess in said piston valve, said piston valve having an annular differential area between the larger sealed area above said flow passage means and the smaller sealed area below said flow passage means responsive to pressure in said body bore for releasing said piston valve on application of a predetermined pressure in said body bore to slide to a down position opening said flow passage means to flow.

12. A valve connectable in a well tool string, comprising:

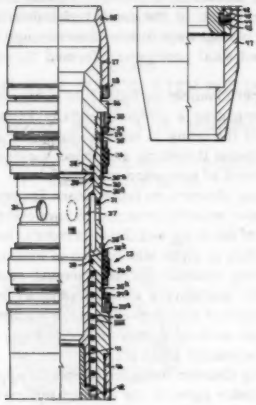
a. a tubular body with a bore therein closed at the lower end;

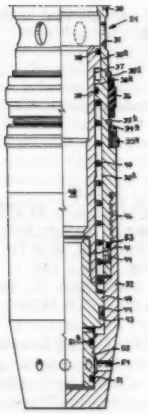
b. upper and lower flow passage means in said body communicating said body bore with the exterior of said body;

c. sliding valve means in said body controlling flow through said upper and lower flow passage means;

d. releasable positioning means positioning said sliding valve means up closing said upper flow passage means to flow and opening said lower flow passage means to flow; and

e. means on said sliding valve means biasing said sliding valve means downwardly toward a position opening said





upper flow passage means to flow and closing said lower flow passage means to flow.

4,494,609

TEST TREE

Kenneth L. Schwendemann, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 258,689, Apr. 29, 1981, abandoned. This application Dec. 11, 1981, Ser. No. 329,920

Int. Cl.³ E21B *7/12*

U.S. Cl. 166—336 **36 Claims**

1. A subsurface test tree adapted to be suspended in a blow-out preventer stack comprising,

a tubular valve housing,

a cylinder in said housing,

a spring support in said cylinder,

a piston slidable in said cylinder,

spring means extending between said spring support and said piston and urging said piston in one direction,

a flow conduit providing a flowway extending axially through the housing and having a portion arranged radially inward from said spring means,

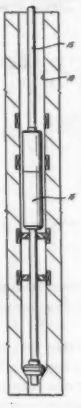
first valve means including a valve member on the spring side of said piston and positioned at least in part in the portion of the flowway surrounded by said spring means and between said spring support and piston in at least one position of the valve member,

said valve means connected to said piston and controlling flow through said flowway in response to reciprocation of said piston,

a control fluid conduit in said body extending from the side of the piston opposite said spring means,

a stinger,

means for releasably latching said stinger to said valve housing,



a control fluid conduit in said stinger communicating with the control fluid conduit in said body when said stinger is latched to said valve housing,

a tubing depends from said housing,

a hydraulically operated surface controlled subsurface safety valve in said tubing,

a hydraulic line for providing operating pressure fluid to said safety valve between said safety valve and a port in said housing, and

means in said housing establishing fluid communication between said port and said control fluid conduit.

4,494,610

METHOD FOR RELEASING STUCK DRILL PIPE

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,789

Int. Cl.³ E21B *31/03*; C09K *7/02*

U.S. Cl. 166—301 **13 Claims**

1. An improved method for releasing a stuck drill string in the borehole of an underground formation employing an aqueous drilling fluid, the method comprising contacting the stuck drill string with an additive composition effective in reducing the annular pressure exerted by the drilling fluid or mud cake against the stuck drill string and thereby releasing the stuck drill string, the additive composition comprising a major amount of an alcohol selected from the group consisting of methanol, ethanol, normal propanol, isopropanol and mixtures thereof.

4,494,611

APPARATUS FOR PROCESSING SOIL FOR PLANTING

Guillermo D. Alvarez, 16 Searing St., Dover, N.J. 07801

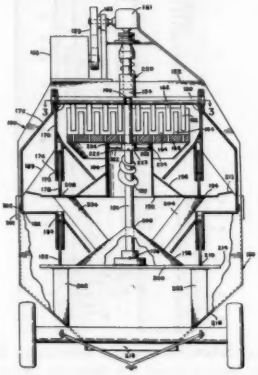
Filed Feb. 11, 1982, Ser. No. 347,873

Int. Cl.³ A01B *43/00*, *35/16*

U.S. Cl. 172—32 **12 Claims**

1. An apparatus for processing soil by mechanical means comprising:

a. a housing having a top portion with an aperture located therein, a bottom portion with an aperture located therein, for the respective gravitational ingress and egress of a quantity of soil, a plurality of planar surfaces, supported within said housing; a vertical rotatable power drive shaft centrally located in said housing with said shaft having a plurality of radially extending support arms rotatable therewith, said arms having supported thereon, a crushing means comprising a plurality of rotating discs in series rotating about said vertical power driven shaft, on said plurality of planar surfaces;



b. separating means supported by said plurality of radially extending support arms, said radially extending arms having secured thereto, downwardly extending pins; a disc plate mounted about said power driven shaft and having a plurality of openings therein for the passage therethrough of said soil and having extending upwardly therefrom a plurality of arcuate inclined pins, said upwardly extending arcuate inclined pins cooperating with said downwardly extending pins to separate the rocks and other large objects from the soil; and,

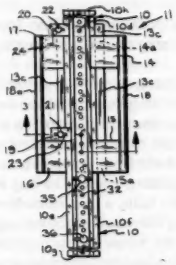
c. means for communicating said soil to said top portion aperture.

4,494,612

MANUALLY OPERABLE POST DRIVER

Harry Bell, 818 E. Shaw St., Charlotte, Mich. 48813

Filed Feb. 22, 1983, Ser. No. 468,297
Int. Cl.³ B25D *1/00*
U.S. Cl. 173—1 **17 Claims**



16. The method for driving a post with a U-shaped cross-section with a bottom (**10*a***), two opposite legs (**10*b*, 10*c***) and lateral extensions (**10*e*** and **10*f***) from each leg and having two opposing ends (**10*g*** and **10*h***) which can be blunt which comprises:

(a) mounting on a post a manually operable post driver including slide hammer means (**11**) manually slideable and reciprocally movable on a segment along the post between the two opposing ends (**10*g*** and **10*h***) of the post with retaining means (**14*a*, 15*a*, 19** and **20**) which removably engage the lateral extensions of the post the retaining means including at least one post engaging member on the slide hammer means slideably engaging each of the lateral extensions of the post and wherein at least one of the post engaging members is disengageable from the post extension to allow removal of the slide hammer means from the post and with hand holding members (**18** and **18*a***) on the hammer means for manual operation and with a hammer head (**25**) on the hammer means and including anvil means (**12**) with securing means for removable rigid mounting of the anvil means on the post intermediate to the ends of the post adjacent to the segment of movement of the hammer means and wherein in use the hammer head of the slide hammer means impacts the anvil means to drive or to remove the post from the ground;

(b) impacting the slide hammer means on the anvil means to drive or remove the post from the ground; and

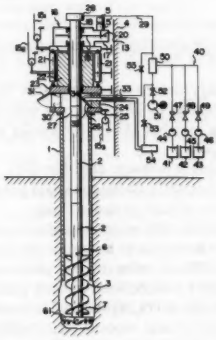
(c) disengaging the disengageable post engaging member and thus the slide hammer and the anvil means from the post.

4,494,613

METHOD AND APPARATUS FOR DRIVING HOLLOW PILES INTO THE GROUND

Hiroaki Tamaki, Hiratsuka, and Joji Nakamura, Kamakura, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,270
Int. Cl.³ E02D *7/26*
U.S. Cl. 173—74 **9 Claims**



1. An apparatus for driving a hollow pile into the ground, comprising:

a crane vehicle having a support member pivotally mounted thereto;

a mounting member mounted for up and down movement relative to the support member, said mounting member having detachably mounted thereto a hollow pile to be driven into the ground;

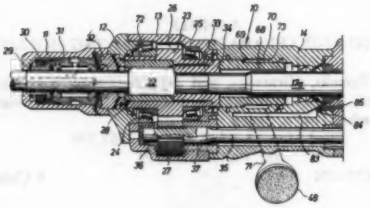
a drive mechanism mounted to said crane vehicle for up and down movement relative to the support member, said drive mechanism having a hollow drive shaft and means for rotating the drive shaft;

a cylindrical member having a discharge opening mounted on said mounting member;

a cover mounted in said cylindrical member adapted for discharging earth and sand in a plug state;

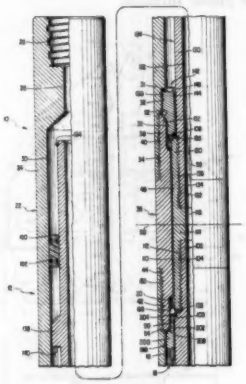
a hollow rod detachably connected to said hollow drive shaft and driven thereby;
a cutter mounted to the leading end of said hollow rod;
a short auger fixedly secured to a leading end portion of said hollow rod;
a first nozzle orifice formed in said hollow rod at a portion immediately above said short auger;
a second nozzle orifice formed in said hollow rod at a portion between said cutter and said short auger;
a source of compressed air;
a source of liquid;
means connected to said source of compressed air and liquid for mixing the compressed air with the liquid; and
first conduit means for connecting said mixing means to the inside of said hollow drive shaft.

4,494,614
HYDRAULICALLY OPERATED IMPACT DEVICE
Ake T. Eklöf, Skärholmen, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Feb. 5, 1982, Ser. No. 346,238
Claims priority, application Sweden, Feb. 11, 1981, 8100961
Int. Cl.³ B23B *45/16*; F01B *31/00*
U.S. Cl. 173—116 **13 Claims**



1. An hydraulically operated impact device, e.g. a rock drill, comprising:
a reciprocably driven hammer piston (17*a–c*) arranged to impact upon an anvil means of a tool member (22);
a supporting member (33,34) for axially supporting the tool member (22);
means defining a pressure chamber (70);
means for constantly connecting said pressure chamber (70) to a source of high pressure fluid;
a support piston (68) which is slidable in a cylinder means and which is subject to hydraulic pressure in said pressure chamber (70) in order to bias said supporting member (33,34) into a defined forward end position;
narrow clearances (75,76) located between relatively moving surfaces of said support piston (68) and said cylinder means in which said support piston (68) is slidable, said narrow clearances (75,76) forming narrow leak passages from said pressure chamber (70);
sealing rings (79,80) located at the outer end portions of said narrow clearances (75,76) to seal off the ends of said narrow clearances between said support piston (68) and said cylinder means;
passages (81,82) leading from portions of said narrow clearances interior of said sealing rings and communicating with said narrow clearances (75,76); and
an orifice restrictor (84) connected to said narrow clearances (75,76) via said passages (81,82), said narrow clearances (75,76) being connected in series with said passages (81,82) and said orifice restrictor (84) to a sump, said orifice restrictor (84) being connected between said narrow clearances (75,76) and said sump.

4,494,615
JARRING TOOL
Kenneth R. Jones, Corpus Christi, Tex., assignor to Mustang Tripsaver, Inc., Corpus Christi, Tex.
Filed Oct. 23, 1981, Ser. No. 314,466
Int. Cl.³ B25D *9/00*; E21B *4/00*
U.S. Cl. 173—119 **3 Claims**



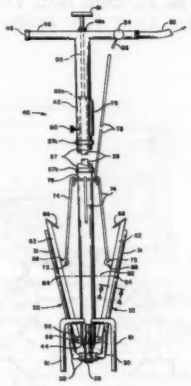
1. A jar comprising:
a barrel and a mandrel telescoped relative thereto and defining therebetween a spring chamber;
a spring in the spring chamber arranged to be stressed upon untelescoping movement between the barrel and the mandrel;
impact members carried by the barrel and mandrel for creating an impact force upon stressing of the spring and actuation of the jar;
a ball transfer mechanism operating between the barrel and mandrel for stressing the spring upon initial untelescoping movement of the barrel and mandrel and, after a predetermined untelescoping movement between the mandrel and barrel, for releasing the barrel and mandrel for free untelescoping movement to impact the members, the ball transfer mechanism including a plurality of balls and a carrier having a plurality of openings therein receiving the balls, the carrier having an end disposed in the spring chamber and abutting the spring for operatively connecting the carrier and the spring for biasing the carrier with the spring;
the spring being positioned to bias the carrier toward a location positioning the balls in latching engagement with the mandrel;
the barrel comprising a section providing a surface constraining the balls against radial movement for the duration of the preliminary untelescoping movement and then releasing the balls to enable radial movement thereof for unlatching the balls from the mandrel;
the mandrel comprising a notch having a frustoconical surface abutting the balls, a pair of bodies and a connecting section securing the mandrel bodies together and having a wear surface, the notch being provided in part by the wear surface, the mandrel connecting section being symmetrical about a plane perpendicular to a longitudinal tool axis to provide a second wear surface, the connecting section being invertible to present the second wear surface to the ball transfer mechanism.

4,494,616

APPARATUS AND METHODS FOR THE AERATION OF CESSPOOLS

George B. McKee, 472 Bay Ave., Patchogue, N.Y. 11772

Filed Jul. 18, 1983, Ser. No. 514,935
Int. Cl.³ E21B 7/18, 7/20
U.S. Cl. 175—67 7 Claims



1. A tool for implanting aeration apparatus beneath a pool for collecting waste material in a liquid carrier, comprising:

a. an extended hollow tube having an open leading edge at one end and a handle closing off the other end;

b. means extending from the side of said hollow tube adjacent said leading edge and projecting past said leading edge for communicating with the interior of said hollow tube;

c. means pivotally mounted on said tube adjacent said leading edge for supporting said aeration apparatus, said pivotally mounted means comprising a plurality of arms hinged on said hollow tube and pivoting about 180° between a retracted position folded in against said hollow tube and a position whereby said arms are projected forward of said hollow tube;

d. said aeration apparatus comprising a center tube entering said open leading edge of and extending up through said tube and aerating arms communicating with the bottom of said center tube and nestled against the outwardly facing sides of said hinged arms; and

e. means for controlling the flow of compressed air through said handle into said hollow tube, into said aeration apparatus and out said leading edge and said extending means.

7. A method for implanting an aeration device in the ground beneath a cesspool comprising the steps of:

a. mounting said device on a tool having arms in a retracted position to which said tool is engaged,

b. supplying air under pressure to said tool, said tool having means to project said compressed air forwardly;

c. lowering said tool through the bottom of said pool and into the ground surface beneath said pool, said compressed air being projected acting to agitate the material into which said tool is being lowered thereby facilitating movement of said tool;

d. upon reaching a preselected depth for said tool, raising said tool, the solid material in which said tool is buried causing said arms to spread and release said aeration device; and

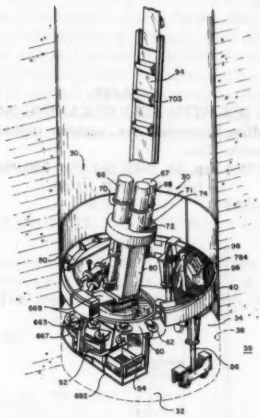
e. retracting said tool causing said arms to rotate until said arms extend down leaving said aeration device in position below said pool to deliver air under pressure to aerate said pool.

4,494,617

SHAFT BORING MACHINE

Larry L. Snyder, Golden, Colo., assignor to Harrison Western Corporation, Golden, Colo.

Filed Jan. 27, 1983, Ser. No. 461,675
Int. Cl.³ E21C 1/00; E21B 3/00
U.S. Cl. 175—86 96 Claims



1. A machine for boring a shaft in earth strata or the like, the shaft having a generally cylindrical side wall and a face at one end thereof which is cut away by the machine, and comprising:

an annular support ring means for supporting the machine on the sidewall of the shaft during a cutting stroke having an outside diameter approximately equal to the diameter of the shaft for being located in closely spaced circumjacent relationship to the side wall of the shaft;

clamping means associated with said support ring means for causing selective clamping engagement of said support ring means with the side wall of the shaft to fixedly axially hold the machine in the shaft;

a carriage means movably mounted on said support ring means in fixed axial relationship thereto for 360° circumferential movement thereabout and relative thereto;

carriage drive means operatively mounted between said rotatable carriage means and said support ring means for causing relative circumferential movement therebetween;

a rotary cutting wheel means having a central axis of rotation supported by said carriage means and adapted to be located adjacent the end face of the shaft and having a diameter substantially less than the diameter of the shaft for cutting the end face of the shaft in a continuous spiral path to elongate the shaft during each 360° revolution of said carriage means;

cutting wheel drive shaft means supported by said carriage means for rotatably driving said cutting wheel means and having a longitudinal axis of rotation;

motor drive means operatively associated with said cutting wheel drive shaft means for causing rotation of said drive shaft means and said cutting wheel means;

cutting wheel support means for holding said cutting wheel means central axis of rotation and said cutting wheel drive shaft means at a fixed acute angle of inclination relative the axis of the shaft;

axial shifting means for enabling axial movement of said cutting wheel means and said drive shaft means relative to said carriage means and said support ring means toward and away from the end face of the shaft and for forcing said cutting wheel means into cutting engagement with the end face of the shaft during a single continuous extension of said axial shifting means as said cutting wheel means is carried around said support ring means whereby

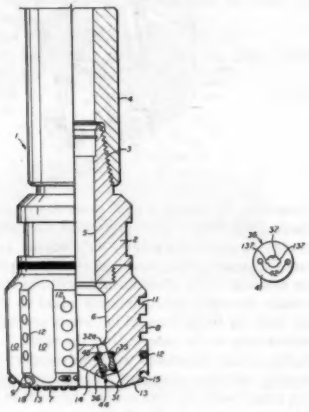
a continuous spiral cut of the end face is made during each 360° revolution of said carriage means.

4,494,618

DRILL BIT WITH SELF CLEANING NOZZLE

Robert P. Radtke, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,986
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—393 **4 Claims**



1. A drill bit with replaceable nozzles comprising:

a drill body having a hollow tubular body adapted to be connected to a drill string,

said drill body having an exterior peripheral stabilizer surface and a front end face facing forwardly in the direction of drilling,

a plurality of spaced apart diamond cutting disks supported stationarily in cutting position in said front end face,

at least one nozzle passage in said drill body comprising a duct opening from the interior of said body and a counterbore aligned therewith which opens through said front end face adjacent to said cutting elements, said passage including a shoulder,

a removable self-cleaning nozzle member of abrasive resistant hard metal of an exterior shape mounted within said counterbore and restrained by said shoulder,

means securing said nozzle member in position against said shoulder in said counterbore,

said nozzle member having a forwardly directed longitudinal passage therethrough for conducting a flow of drilling fluid,

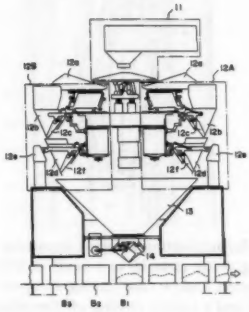
said nozzle passage being non-circular in cross-section and sufficiently out-of-round that the portions thereof outside a maximum circular cross-section of said passage define auxiliary passages which are coextensive longitudinal with the center of said longitudinal passage to enable drilling fluid to flow around a particle of material lodged at the center of said passage, said maximum circular cross-section being smaller than the cross-section of said duct.

4,494,619

COMBINATORIAL WEIGHING APPARATUS WITH BULK AND FINE FEED

Tadaaki Matsuno, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 22, 1983, Ser. No. 506,797
Claims priority, application Japan, Jun. 23, 1982, 57-107791; Dec. 27, 1982, 57-234637
Int. Cl.³ G01G *19/22, 13/02*
U.S. Cl. 177—25 **9 Claims**



1. A combinatorial weighting apparatus having a plurality of weighing machines including weighing hoppers charged with batches of articles to be weighed and weight detectors for measuring the weights of the batches of articles charged into the weighing hoppers, so that a combination of batches of articles which gives a total weight value equal or closest to a target weight value can be selected and discharged, said combinatorial weighing apparatus comprising:

at least one predetermined weighing machine for discharging at least one batch of articles for a rough charging operation;

combinatorial computing means for computing a total weight of said at least one batch of articles discharged from said at least one predetermined weighing machine for the rough charging operation as a rough charging weight value and for selecting a combination of weighing machines for a corrective charging operation which gives a total weight combination equal or closest to a corrective charging weight value which is the difference between the target weight value and said rough charging weight value;

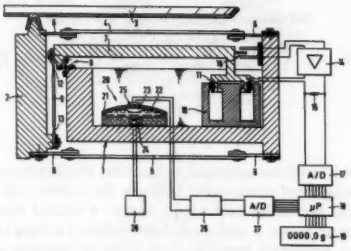
discharge control means for discharging along a first discharge path, said at least one batch of articles from said at least one predetermined weighing machine for the rough charging operation at a prescribed first timing, and for discharging along a second discharge path, said batches of articles for the corrective charging operation from said selected combination of weighing machines at a second timing; and

a chute, positioned in said first and second discharge paths, for collectively discharging the separately discharged batches of articles for the rough charging operation and for the corrective charging operation into a single location.

4,494,620
ELECTRIC BALANCE

Erich Knothe, Bovenden; Franz-Josef Melcher, Hardegsen; Eberhard Stadler, Göttingen, and Rainer Exner, Wollbrandshausen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,258
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234372
Int. Cl.³ G01G *19/22, 21/12, 21/24*
U.S. Cl. 177—25 **7 Claims**

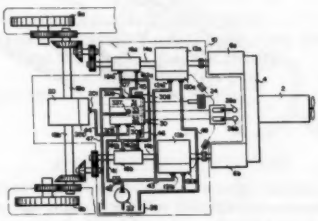


1. A high resolution electronic balance comprising:
an electromagnetic balance movement;
a microprocessor for digital signal processing, receiving signals from said movement;
a signal display for signals from said microprocessor; and
an electric inclination meter built into the housing of said balance, the signals from said meter being input to said microprocessor to compensate the inclination-dependent errors of the balance movement.

4,494,621
STEERING CONTROL SYSTEM FOR CRAWLER TRACTOR TYPE VEHICLES

Yoshihiro Nagata, Kyoto, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,841
Claims priority, application Japan, Sep. 10, 1981, 56-141657
Int. Cl.³ B60K *41/24;* **B62D** *11/08*
U.S. Cl. 180—6.2 **6 Claims**

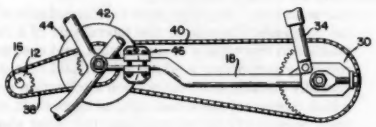


1. A steering control system for crawler tractor type vehicles comprising an engine; a power distributor means adapted to distribute the power derived from the engine into two equal independent portions; left and right independent torque converters each of which receives one of the equally distributed portions, respectively; a power transmission mechanism with left and right power trains independent of each other, each power trains including a transmission gear means, a steering brake means and a reduction gear means and adapted to transmit the power from the left or right torque converter to left or right drive wheel, respectively; and a center clutch means adapted to directly connect or disconnect left and right power take-off transverse shafts, characterized in that said steering control system comprises an interlocking valve means located between a manually operated section and an actuating section and adapted to operatively connect the manually operated section and the actuating section, said manually operated section including a pair of left and right steering levers, linkages connected to the steering levers, respectively, a commonly used brake pedal and a linkage connected to the brake pedal, said actuating section including said left and right steering brake means and said center clutch means; and a hydraulic circuit for selectively supplying hydraulic fluid delivered by a hydraulic pump into said actuating section in response to the action of said interlocking valve means caused by the manipulation of either of said left and right steering levers and/or said brake pedal, whereby said left and right steering brake means and said center clutch means are interrelatedly operated, respectively.

4,494,622
MOTORCYCLE POWER TRANSMISSION AND BRAKE ASSEMBLY

David L. Thompson, 12682 Oxford Dr., La Mirada, Calif. 90638

Continuation-in-part of Ser. No. 222,335, Jan. 5, 1981, abandoned. This application Sep. 9, 1982, Ser. No. 416,370
Int. Cl.³ B62L *1/00*
U.S. Cl. 180—227 **18 Claims**



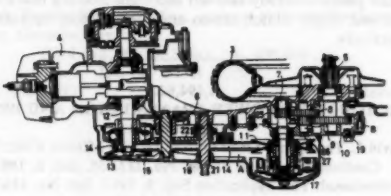
1. A power transmission and brake system for chain driven vehicles, the system comprising:
a frame;
an engine mounted to the frame;
a rotatable drive sprocket operatively connected with the engine and being rotatable thereby;
a swing arm mounted to the frame at a fixedly positioned swing arm pivot axle about which the swing arm is pivotable;
a rear wheel rotatably mounted in the swing arm at a fixedly positioned rear wheel axle, whereby the rear wheel axle is capable of at least a limited travel on an arc relative to the frame;
a rear wheel sprocket fixedly mounted to the rear wheel and rotating about the rear wheel axle;
a first endless drive chain being in permanent engagement with the rear wheel sprocket;
an idle sprocket and brake assembly mounted to the axle of the swing arm pivot, the idle sprocket and brake assembly including first idle sprocket means for engaging the first drive chain, second idle sprocket means for engaging the second drive chain, and a brake member; the first idle sprocket means, the second idle sprocket means and the brake member being fixedly connected to one another for rotation in unison about the axle of the swing arm pivot, the brake member having a frictional surface, and
brake means fixedly connected to the swing arm to move on an arc therewith, said brake means being actuable by an operator of the vehicle for engaging the frictional surface of the brake member and for transmitting a force from the brake member to the swing arm thereby braking the rear wheel of the vehicle through the idle sprocket and brake assembly and the second drive chain and resisting a tendency of the motorcycle to shift forwardly and to transfer weight to the front wheel when said motorcycle is braked, thereby improving traction of the rear wheel of the motorcycle relative to the road surface.

4,494,623

POWER TRANSMISSION CASING APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Noboru Kurata, Kamifukuoka; Kunio Miyazaki, Oi, and Kuniyuki Yamamoto, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 178,942, Aug. 15, 1980, Pat. No. 4,344,500.
This application Aug. 16, 1982, Ser. No. 408,685
Claims priority, application Japan, Aug. 21, 1979, 54-105543
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.³ B62M 9/06
U.S. Cl. 180—230 2 Claims



1. A power transmission casing apparatus in a motorized two-wheeled vehicle comprising:

a case main body extending from one lateral side of an internal combustion engine to one lateral side of a rear wheel positioned rearwardly of said engine, said case main body rotatably supporting a wheel axle of said rear wheel and partially housing in a rear portion a reduction gear means which comprises the wheel axle, an input shaft, and a gear train operatively interconnecting the input shaft to the wheel axle, said casing apparatus also housing V-belt means comprising a rear pulley on the input shaft, a forward pulley on an output shaft of the engine and a V-belt operatively connecting the pulleys, each of the pulleys having a circumferential periphery;

a transmission side wall member extending to enclose said reduction gear means, said input shaft extending through said transmission side wall member; and

a V-belt cover sealingly engaging with the case main body and extending from beyond the forward-most portion of the periphery of the forward pulley to beyond the rearmost portion of the periphery of the rear pulley to enclose the V-belt means;

said gear train comprising a gear of a small diameter provided on said input shaft, a gear of a large diameter provided on said wheel axle, and two intermediate gears which are integral and coaxial one with another and are provided on an intermediate shaft;

said intermediate shaft being located at a position which faces a recess portion formed on the inner side surface of a flange of said rear pulley and a bearing portion of said intermediate shaft projecting towards said inner side surface.

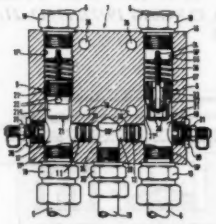
4,494,624

HYDRAULIC DRIVING SYSTEM WITH PROTECTION AGAINST OVERSPEED

Willy Scheuerle, and Georg Prechtel, both of Pfedelbach, Fed. Rep. of Germany, assignors to Willy Scheuerle Fahrzeugfabrik GmbH & Co, Pfedelbach, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,836
Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119808
Int. Cl.³ B62D 11/04
U.S. Cl. 180—308 7 Claims

1. A hydraulic driving system, particularly for use in multiple-axle heavy-duty vehicles with a motor drive for each axle, comprising at least one pump, a plurality of hydraulic driving motors each having an intake port and an outlet port, parallel branch conduits for connecting the high-pressure side and the suction side of the pump in parallel to the intake and outlet ports of the motors; and an overspeed protecting device arranged in said parallel branch conduits, said overspeed protecting device comprising a housing block formed with a first throughbore connectable between the high-pressure side of the pump and the intake port of each hydraulic motor, a first



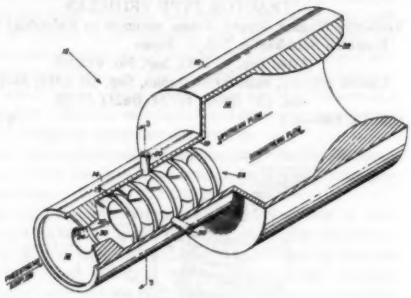
non-linear restrictor arranged in said first throughbore, a second throughbore connectable between the suction side of the pump and the outlet port of the motor, a second non-linear restrictor arranged in said second throughbore a blind bore for receiving additional pressure fluid from an auxiliary source, and a backpressure valve connecting the blind bore to the part of the first throughbore between the restrictor and the intake port of the motor.

4,494,625

AXIAL ACOUSTIC WAVE ATTENUATOR FOR RAMJETS

H. Bernard Mathes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,702
Int. Cl.³ F02K 1/44
U.S. Cl. 181—213 11 Claims



1. Attenuator apparatus installed in a ramjet engine includes a combustion section and an inlet section, the engine inlet section having an inlet nozzle and fuel injection ports and the engine combustion section having an exhaust nozzle and defining a combustion chamber, the attenuator apparatus comprising:

a plurality of spaced apart truncated hollow cone attenuators being dimensionally identical to each other and being installed in said inlet section of said engine, each of said attenuators having a base and a throat, said base defining an area larger than the area defined by said throat, said base of each of said attenuators fixedly attached to said inlet section, said throat of each of said attenuators oriented toward the combustion chamber of said engine, and at least one of said attenuators installed in said inlet section on the side of said fuel injection ports closest to said inlet

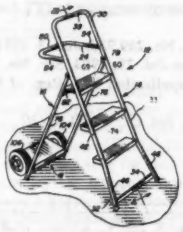
nozzle, and at least one of said attenuators installed on the side of said fuel injection ports closest to said combustion chamber of said engine, and said attenuator closest to said fuel injection ports on said inlet nozzle side of said fuel injection ports defining an aperture for each of said fuel injection ports for creating turbulence and enhancing the mixture of fuel and air adjacent the fuel injection port with which it is associated.

4,494,626

COMBINATION STEPLADDER AND HAND TRUCK APPARATUS

Dale A. Ast, Wichita, Kans., assignor to Harper, Truck, Inc., Wichita, Kans.

Filed Nov. 12, 1982, Ser. No. 440,847
Int. Cl.³ E06C *1/397*; B62B *1/20*
U.S. Cl. 182—20 **8 Claims**



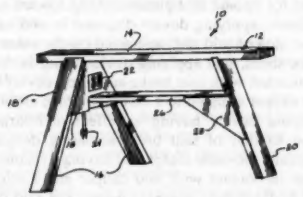
1. A combination stepladder and hand truck apparatus, comprising:
(a) a ladder support frame assembly having a support handle member and a support step assembly connected thereto;
(b) a hand truck support frame assembly having one end pivotally connected to said ladder support frame assembly and a wheel support assembly connected to another end of said hand truck support frame assembly;
(c) said ladder support frame assembly and said hand truck support frame assembly of inverted V-shaped when in the stepladder usage condition ; and
(d) a support and lock plate assembly having a support plate member pivotally mounted between said another end of said hand truck support frame assembly.

4,494,627

PORTABLE WORK STATION

Randy L. Arent, Box 75, Red Feathers Lakes, Colo. 80545

Filed May 2, 1983, Ser. No. 490,375
Int. Cl.³ F16M *11/00*
U.S. Cl. 182—129 **7 Claims**



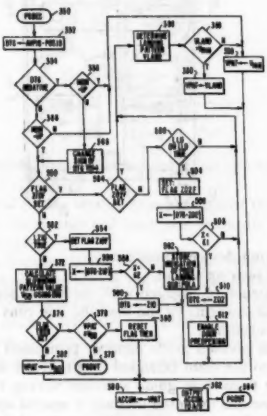
1. A portable work station comprising:
(a) an elongated member having a generally flat top working surface, said elongated member having a first end and a second end;
(b) a pair of legs each having an upper end and a lower end, the upper end of each said leg being securely attached to said elongated member near said first end, wherein each said leg depends downwardly from said elongated member;
(c) bracing means connecting said pair of legs;
(d) a single leg having an upper end and a lower end, the upper end thereof being securely attached to said elongated member near said second end, wherein said leg depends downwardly from said elongated member and is disposed directly beneath said working surface;
(e) electrical receptacle means secured to said work station beneath said working surface; and
(f) extensible leg means secured to said elongated member near its second end, wherein said extensible leg means is vertically adjustable to a length greater than the length of said single leg, wherein said extensible leg means may be extended and is adapted to support said second end of said elongated member.

4,494,628

ELEVATOR SYSTEM

Vladimir Uberek, Troy Hills Township, Morris County, and Matthew F. Kersen, Union, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1983, Ser. No. 523,993
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R **8 Claims**



1. An elevator system, comprising:
a structure having a plurality of floors and a hoistway;
an elevator car mounted for movement in said hoistway to serve the floor;
motive means for moving said elevator car to a target floor;
pulse means responsive to movement of said elevator car for providing distance pulses in response to predetermined standard increments of movement;
means responsive to said distance pulses for providing a count representative of the position of said elevator car in said hoistway;
means responsive to said car position count and to the location of the target floor for providing a distance-to-go (DTG) count representative of the distance between the elevator car and the target floor;
means defining a floor zone adjacent to each floor which has a predetermined dimension;
detector means for detecting the arrival of said elevator car at the target floor zone;
comparator means for comparing the DTG count with the predetermined dimension of the target floor zone in response to said detector means detecting the arrival of said elevator car at the target floor zone;

means responsive to said comparator means for setting the DTG count equal to the predetermined dimension of the floor zone when the DTG count and said predetermined dimension have a predetermined relationship;

and means responsive to the DTG count for providing a speed pattern signal for said motive means, at least when said elevator car is stopping at a target floor.

4,494,629

LOWERING DEVICE AND METHOD

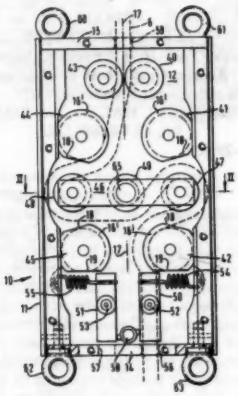
John L. Raeburn, 5 Dunstan Close, East End Rd., London N 2, England

Filed Aug. 10, 1982, Ser. No. 406,983

Claims priority, application United Kingdom, Aug. 12, 1981, 8124659

Int. Cl.³ B65H 59/14

U.S. Cl. 188—65.5 **14 Claims**



1. A lowering device comprising:

a line for lowering a load,

a support structure engaged with the line in such a manner that upon lowering of the load the line runs through the support structure,

a transverse pivoted guide member positioned transversely relative to the main extended length of the line in operation, the transverse guide member having two primary guide elements mounted thereon in spaced apart relationship and the transverse guide member being pivotally mounted on the support structure at a pivot axis substantially midway between the two primary guide elements, and

manual control means coupled to the transverse guide member to effect pivotal movement thereof by an operator,

the line being threaded along a path through the support structure such that the line passes around and bears against both primary guide elements on the transverse guide member and experiences a braking effect thereby,

the route of the line through the support structure comprising a path through an opening in the support structure, a path around an arc of a first secondary guide element, a path between the first secondary guide element and a first primary guide element, a path around an arc of the first primary guide element, a path between the two primary guide elements leading back towards the said opening, a path around an arc of the second primary guide element returning to a direction away from the said opening, a path between the second primary guide element and a second secondary guide element, a path around an arc of the second secondary guide element, and a path through a further opening in the support structure, said further opening being positioned at a region of the support structure remote from the first opening with the guide member and the guide elements arranged in a region between the two openings,

the path of the line through the support structure being such that tension in the line due to a load in operation produces a turning moment on the transverse guide member which pivots the transverse guide member to bring each primary guide element towards an associated secondary guide element mounted on the support structure with the line between the associated primary and secondary guide elements to increase the braking effect on the line, the manual control means being operable to increase or decrease the braking effect by turning the transverse guide member in the same or the opposite sense to the effect of the load tension in the line.

4,494,630

FLOATING-CALIPER SPOT-TYPE DISC BRAKE

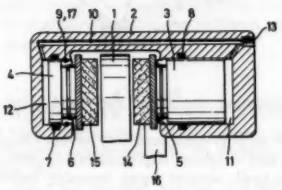
Roberto Stoka, Nauheim, and Lucas H. Haar, Niddatal, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 269,938, Jun. 3, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 517,992

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026817

Int. Cl.³ F16D 65/20

U.S. Cl. 188—71.8 **18 Claims**



1. A floating-caliper spot-type disc brake comprising:

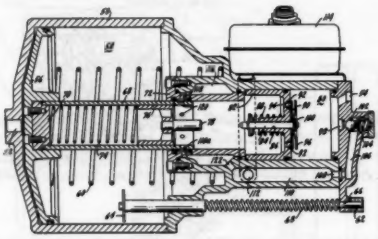
a caliper displaceable relative to a support member, said caliper embracing a brake disc having a hydraulic brake-actuating device disposed therein on one side of said disc operating directly on an adjacent one of two brake shoes each disposed on a different side of said disc, said caliper operating on the other of said two brake shoes indirectly by means of a reaction, said brake actuating device incorporating a first hydraulically movable piston and a first mechanism in contact with said caliper and said first piston for providing a predetermined brake clearance between said one of said two brake shoes and the adjacent side of said disc upon termination of a braking operation, wear of said one of said two brake shoes being compensated for by said first piston moving toward said disc; and

a hydraulic applying device disposed in said caliper on the other side of said disc operating on the other of said two brake shoes, said applying device being in constant communication with said brake-actuating device via a line in said caliper coupled to a common brake circuit input, said applying device having an effective hydraulic surface equal to that of said brake-actuating device, having a hydraulic movable means and having a second stop mechanism in contact with said caliper and a selected one of said hydraulically movable means and said other of said two brake shoes to limit movement of said other of said two brake shoes to provide said predetermined clearance between said other of said two brake shoes and the adjacent side of said disc upon termination of said braking operation, said applying device having a power stroke limited to said predetermined clearance and said reaction compensating for wear of said other of said two brake shoes.

4,494,631
COMBINATION AIR CYLINDER AND HYDRAULIC SLACK ADJUSTER

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Sep. 27, 1982, Ser. No. 424,060
Int. Cl.³ B60T 11/10
U.S. Cl. 188—153 R 5 Claims



1. A combination air brake cylinder and hydraulic slack adjuster for a railroad car brake system including:

a housing, an air-operated piston in said housing, an air port in said housing in communication with said air piston, a return spring in said housing for said air piston,

a fluid outlet port in said housing, fluid piston and valve means within said housing connected to said air piston and responsive to brake application movement thereof to supply a brake shoe application fluid pressure at said outlet, said fluid piston and valve means including a first piston attached to said air piston and movable therewith, and a second piston, spaced from said first piston, and movable in response to fluid pressure forces created by movement of said first piston, a fluid reservior, check valve controlled fluid passages within a portion of said housing for connecting said reservoir with opposite sides of said second piston for adjusting slack in the brake rigging during brake application functions, said second piston having a seal portion positioned to close said check valve controlled connecting passages during brake application movement of said hydraulic slack adjuster.

4,494,632
PISTON GUIDE AND SEAL FOR DUAL-TUBE HYDROPNEUMATIC SHOCK ABSORBER

Johannes J. de Baan, and Michael Hönig, both of Ennepetal, Fed. Rep. of Germany, assignors to August Bilstein GmbH & Co. KG, Ennepetal-Altenvoerde, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,816
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210518
Int. Cl.³ F16F 9/36; B60G 15/00
U.S. Cl. 188—269 11 Claims

1. A hydropneumatic shock absorber comprising:

an outer tube having upper and lower ends and centered on an upright axis;

an inner tube inside the outer tube, forming therewith an outer gas/liquid chamber, having upper and lower ends, and itself internally forming an inner chamber;

a piston rod inside the inner tube in the inner chamber and generally coaxial with the tubes;

a body of liquid filling the inner chamber and partially filling the outer chamber;

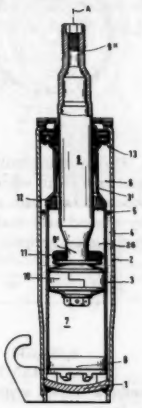
a piston carried in the inner chamber on the rod, radially outwardly engaging the inner tube, and subdividing the inner chamber into an upper and a lower compartment;

a foot valve at the lower ends between the lower compartment and outer chamber and permitting limited liquid flow therebetween;

a rigid centering washer having an outer periphery engaged against the upper end of the outer tube and an axially extending ridge engaged directly radially against the upper end of the inner tube;

a flexible annular outer lip on the washer, engaged radially against the upper end of the inner tube, and bearing flexibly thereagainst in a direction opposite the direction in which pressure in the upper compartment is effective against the outer lip, whereby the outer lip permits limited fluid flow from the upper compartment to the outer chamber but blocks opposite flow;

a flexible annular inner seal underneath the ridge on the washer and engaged radially inwardly against the piston



rod, whereby the washer and inner seal upwardly close off the inner chamber;

an outer seal on the washer engaged against the outer tube, whereby the washer and outer seal upwardly close off the outer chamber;

an element forming in the inner chamber an upwardly open pocket down into which the inner seal projects; and

structure forming a passage from the inner chamber axially past the pocket, whereby gas collecting in the inner chamber below the pocket can bleed up past the pocket and then pass by the lip into the outer chamber.

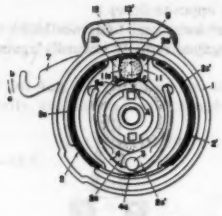
4,494,633
AUTOMATIC BRAKING-GAP ADJUSTER SYSTEM FOR MECHANICAL DRUM BRAKES

Isao Idesawa, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Mar. 26, 1982, Ser. No. 362,492
Claims priority, application Japan, Mar. 31, 1981, 56-45514[U]; May 30, 1981, 56-80179[U]; Jul. 15, 1981, 56-110356; Jul. 15, 1981, 56-105291[U]; Jul. 15, 1981, 56-105293[U]; Jul. 15, 1981, 56-105294[U]; Jul. 15, 1981, 56-105295[U]; Jul. 15, 1981, 56-105296[U]; Dec. 26, 1981, 56-193583[U]
Int. Cl.³ F16D 65/56
U.S. Cl. 188—329 14 Claims

1. An automatic brake-gap adjuster system for mechanical drum brakes comprising a pair of brake shoes, each brake shoe having one end pivotally supported on a back plate and the other end adapted to move outwardly into engagement with the inner periphery of a brake drum; a cam member rotatably disposed through said back plate between said other ends of said pair of brake shoes and adapted to be rotated by a brake arm, said cam member comprising a cam portion having a pair of opposed flat sides and a tapered axial guide groove in each said side tapering from a shallower depth at the end proximate said back plate to a greater depth at the distal end thereof; cam collars slidably disposed in said guide grooves to abut onto said

other ends of said brake shoes, whereby said cam collars are rotatable with said cam member, slidable toward a cam shaft and movable in the expanding direction of said brake shoes; an actuating member threaded into said cam member to abut onto the end faces of said collars; and an adjusting member adapted to rotate said actuating member in response to the abrasion of



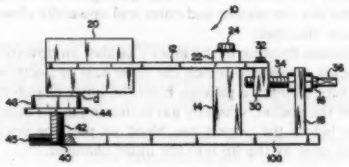
said brake shoes, thereby threadedly moving said actuating member toward said cam shaft; whereby said cam collars are slidingly moved toward said cam shaft along said tapered groove to thereby expand said brake shoes and adjust the brake-gap between the inner periphery of said brake drum and said brake shoes.

4,494,634

IMPACT DAMPER

Katuo Kato, Sagamihara, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1981, Ser. No. 336,021
Int. Cl.³ F16F 7/10
U.S. Cl. 188—380 **8 Claims**



1. An impact damper comprising:

a bed plate attached to an object of damping forming a main vibration system with a main natural frequency;

an additional weight;

additional elastic means supporting said additional weight to permit said weight to be vibrated in the same direction as the vibration of said object of damping;

said additional weight and said additional elastic means comprising an additional vibration system having a natural frequency of vibration different from that of said main vibration system;

mounting means for mounting said additional elastic means on said bed plate; and

stop means mounted on said bed plate and having one side face against which said additional weight strikes when said additional weight vibrates with an amplitude exceeding a given level,

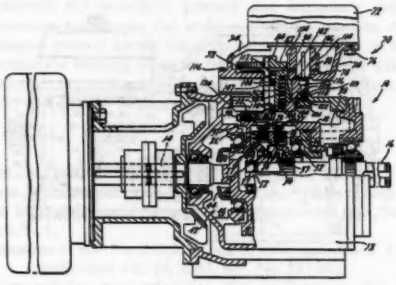
the space between said additional weight and said stop means as measured when said object of damping is not vibrating ranging from 0% to 80% of the resonance amplitude of said object of damping, and the additional natural frequency of said additional vibration system ranging from 60% to 80% of the main natural frequency of said main vibration system.

4,494,635

INCHING DRIVE FOR CLUTCH/BRAKE UNIT

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Filed Jul. 30, 1982, Ser. No. 403,300
Int. Cl.³ B60K 41/28; F16H 57/10, 37/06
U.S. Cl. 192—12 C **8 Claims**



1. An inching drive unit for a clutch/brake unit having a main housing and an input shaft and an output shaft operably associated with said main housing, said inching drive comprising:

inching motor means for driving said inching drive unit, having a drive shaft extending therefrom;

a second housing secured to said inching motor means, said drive shaft of said inching motor means extending into said second housing;

first gear means disposed at least in part within said second housing and operably associated with said inching motor drive shaft including a gear shaft and at least one pair of gears fixedly mounted one at substantially each end of said gear shaft;

second gear means operably associated with said input shaft of said clutch/brake unit; and

means for selectively engaging said first gear means with said second gear means comprising a piston disposed around and fixedly secured to said gear shaft, a chamber surrounding said gear shaft within which said piston moves, and means biasing said piston to place said first gear means out of engagement with said second gear means, wherein engagement of said first gear means with said second gear means permits said inching motor means to drive said input shaft of said clutch/brake unit.

4,494,636

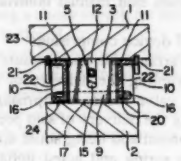
ONE-WAY CLUTCH

Shozo Wakabayashi, and Kinzo Narita, both of Osaka, Japan, assignors to Tsubakimoto-Morse Co., Ltd., Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,394
Claims priority, application Japan, Mar. 24, 1982, 57-45555
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ F16D 41/07
U.S. Cl. 192—41 A **5 Claims**

1. In a one-way clutch having a plurality of annular sprags inserted between an inner and an outer ring, a radially opening groove formed in each sprag between the sides thereof, a spring fitted in said groove to urge the sprag toward the engaging direction, an annular retainer comprising a wire rod bent into alternately U-shaped sections each having an axially extending part and a circumferentially extending part, the axially extending part of the retainer holding the sprag in conjunction with the spring, a pair of annular side plates disposed between said circumferentially extending parts and both sides of the sprags, the side plate having a recess in the peripheral edge thereof into which said axially extending part fits to prevent

the retainer from moving, and the sprag having an external shape for permitting rotational contact with the axially extending part of the retainer as the sprag moves into and out of



engagement with the inner and outer rings, comprising the improvement wherein the side plates have outer and inner circumferences in sliding contact respectively with the inner surface of the outer ring and the outer surface of the inner ring.

4,494,637

POWER TRANSMISSION SYSTEM FOR VEHICLES

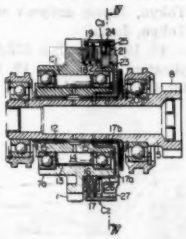
Yusuke Gotoda, Tokyo, and Toshimitsu Yoshimura, Tsurugashima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,292

Claims priority, application Japan, Feb. 20, 1982, 57-26356

Int. Cl.³ F16D *41/06, 47/04*

U.S. Cl. 192—48.4 **7 Claims**



1. A power transmission system for vehicles, comprising a driving member connected to a crankshaft of an engine, and a driven member connected to a driving wheel, said driving and driven members being joined together via a one-way clutch, a friction clutch, and a direct-coupling clutch, which are disposed parallel to one another, said one-way clutch being so formed that it is put in a connected state when a positive load is applied thereto and in a disconnected state when a negative load is applied thereto, said friction clutch being so formed that it is slipped when it receives the rotary torque not lower than a predetermined rotary torque, said direct-coupling clutch being so formed that it is normally maintained in a connected state while being placed in a disconnected state when the speed of revolution of said engine has exceeded a predetermined level.

4,494,638

SYNCHRONIZING DEVICE, ESPECIALLY FOR THE TRANSMISSION OF A MOTOR VEHICLE

Walter Zenker, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,644

Int. Cl.³ F16D *13/74, 23/02*

U.S. Cl. 192—48.91 **4 Claims**

1. A synchronizing device connected to a vehicle transmission lubricant circuit, said device comprising:

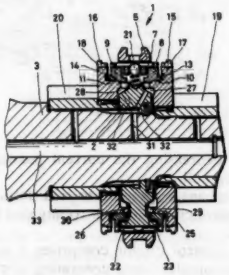
a transmission shaft;

an annular gearshift-sleeve carrier non-rotatably arranged on said transmission shaft;

a clutch ring adjacent to said gearshift-sleeve carrier and having a conical, radially outwardly directed friction surface, with an annular chamber being associated with said gearshift-sleeve carrier and said clutch ring and with the annular chamber being in constant communication with said lubricant circuit;

a gear rigidly associated with said clutch ring and rotatably mounted on said transmission shaft; and

a synchronizing ring arranged radially outwardly of and around at least a portion of said clutch ring, said synchronizing ring having a corresponding conical friction surface with which said friction surface of said clutch ring cooperates; a plurality of pocket-like recesses being ar-



ranged on at least one conical friction surface of said synchronizing ring and said clutch ring respectively, with said pocket-like recesses extending substantially radially through said friction surface as well as being open toward said conical friction surface of the opposing clutch ring and synchronizing ring respectively, as well as also being open toward said annular chamber in constant communication with said lubricant circuit for improved lubrication and cooling of the respective conical friction surfaces over which lubricant accummulation from said pocket-like recesses is distributed where said synchronizing ring and said clutch ring are brought into frictional engagement so that unavoidable wear at said conical friction surfaces can be kept small in that sufficient lubrication is brought between said conical friction surfaces.

4,494,639

ELECTRO-MAGNETIC CLUTCH CONTROL SYSTEM FOR AUTOMOBILES

Toshio Takano, Hamuramachi, and Ryuzo Sakakiyama, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,117

Claims priority, application Japan, Jul. 31, 1980, 55-105717; Jul. 31, 1980, 55-105718; Jul. 31, 1980, 55-105720; Jul. 31, 1980, 55-105721

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.052 **2 Claims**

1. A system for controlling an electro-magnetic clutch of an internal combustion engine mounted on a car, which has a drive member secured to a crankshaft of said internal combustion engine, a driven member adjacent said drive member, a magnetizing coil provided in one of said members, a transmission secured to said drive member having multi-stage change gears, comprising

a first detecting means responsive to the operation of said change gears for producing a gear-changing output signal,

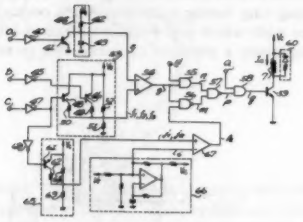
a second detecting means responsive to the acceleration of said internal combustion engine for providing output signals,

a first control circuit responsive to output signals of said first detecting means and second detecting means for producing an output signal for a period decided by the output signal of said second detecting means,

a first gate means responsive to the output signal of said first control circuit fo producing an output signal,

switch means responsive to the output signal of said first gate means to allow the current to flow to said magnetizing coil,

a second control circuit responsive to the output signal of said second detecting means for producing an output



signal for decreasing the current passing through said magnetizing coil,

second gate means responsive to said output signal of said second control circuit for controlling said first gate means, and

said second control circuit comprises a standard voltage circuit, a triangular wave generating circuit, and a comparator means for comparing outputs of said standard voltage circuit and said triangular wave generating circuit for producing a pulse train having a pulse width decided by the level of the output signal of said standard voltage circuit.

4,494,640

HYDRAULIC CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION

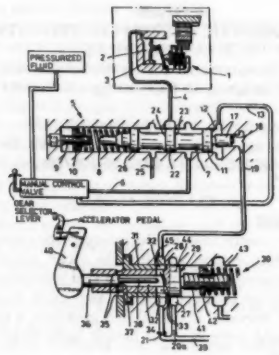
Ernst-August Honig, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,643

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205198

Int. Cl.³ B60K *41/16*; F16D *21/04*

U.S. Cl. 192—0.052 **3 Claims**



1. In an automatic transmission of an automobile having a mechanical planetary gearing system with hydraulically actuatable gearshift elements for selective engagement of transmission elements; a manual control valve having positions depending upon the position of a manually actuatable selector lever, said manual control valve conveying pressurized fluid for actuation of said gearshift element when said selector lever is positioned for a forward gear, and a pressure medium line communicating between said manual control valve and said gearshift element;

a hydraulic control device comprising:

a shift valve means arranged in said pressure medium line for selectively interrupting the delivery of said pressurized fluid, said shift valve means comprising a piston, said piston controlling the delivery of said pressurized fluid to said gearshift element and being acted upon in one direction by a return spring and acted upon in an opposite direction by a pressure depending upon the position of an accelerator pedal;

a fluid line for delivering pressurized fluid to said piston, for imparting said pressure depending upon the position of an accelerator pedal, said fluid line being connected through a throttle point with a pressure line carrying an engine load-dependent pressure; and

a control valve means, arranged in said fluid line and actuatable by said accelerator pedal, for venting said fluid line when said accelerator pedal is released, and for connecting said fluid line directly with said pressure line, for bypassing said throttle point, when said accelerator pedal is actuated beyond a predefined position.

4,494,641

ELECTROMAGNETIC CLUTCH CONTROL SYSTEM FOR AUTOMOBILES

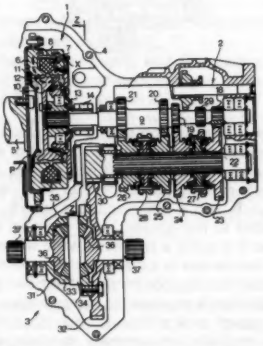
Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 322,816

Claims priority, application Japan, Nov. 19, 1980, 55-162831

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.076 **7 Claims**



1. A system for controlling an electromagnetic clutch for an engine powered vehicle which has an accelerator pedal, a choke valve, an ignition device for said engine, and a circuit containing a magnetizing coil for coupling said electromagnetic clutch, comprising

an acceleration detecting circuit responsive to the depression of said accelerator pedal for producing an output signal,

a pulse generating circuit responsive to said engine ignition device for producing output pulses having a pulse separation which varies in dependency on the engine speed,

first gate means for operatively passing said pulses during occurrence of said output signal from said acceleration detecting circuit,

switch means provided in the circuit of said magnetizing coil

and responsive to the output of said gate means for sending current through said magnetizing coil depending on the output of said gate means,

means comprising a choke switch for being closed when said choke valve is closed,

a correcting circuit responsive to the output of said choke switch for producing a correcting output which is applied to said pulse generating circuit,

said pulse generating circuit means for reducing the pulse width of each of said output pulses in response to said correcting output.

4,494,642

CLUTCH DISC

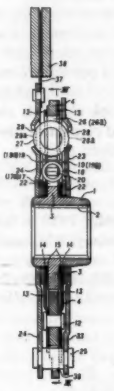
Yasuyuki Hashimoto, Katano, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Feb. 9, 1982, Ser. No. 347,157

Claims priority, application Japan, Feb. 13, 1981, 56-20510

Int. Cl.³ F16D *3/14*

U.S. Cl. 192—106.2 **4 Claims**



1. A clutch disc comprising:

a splined hub;

an inner flange projecting radially from the outer periphery of said hub;

an outer flange arranged around and meshed with said inner flange but separated therefrom to provide a circumferential space therebetween;

a pair of sub-plates fitted at their inner periphery to said hub, one of said sub-plates being fixed to each side face of said outer flange to support said flange on said hub, radially inner portions of said sub-plates being pressed to frictionally engage both side faces of said inner flange;

said sub-plates and said inner flange being formed with axially registered openings therein and having a weak torsion spring arranged in said axially registered openings;

a retaining plate and a clutch plate faced to axially outside faces of said sub-plates opposite to said flange;

friction members positioned about said hub between said sub-plates and said retaining plate and clutch plate, respectively, said retaining plate and said clutch plate being connected together by pins so as to load pressure against said friction members and being supported by said hub;

said outer flange, said retaining plate and said clutch plate being formed with axially registered openings therein; and

strong torsion springs arranged in said openings formed in said outer flange, retaining plate and clutch plate.

4,494,643

APPARATUS FOR ALIGNING ELONGATED ARTICLES

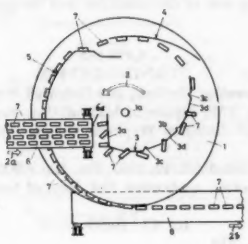
Max Knuchel, Gächlingen, Switzerland, assignor to SIG-Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 12, 1981, Ser. No. 320,683

Claims priority, application Switzerland, Nov. 28, 1980, 8851/80

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—392 **6 Claims**



1. In an apparatus for aligning elongated articles, including a turntable having a center and a periphery, an input track leading to the turntable for conveying elongated articles thereto and having a discharge end above the turntable and a direction of conveyance; a guide rail stationarily supported above the turntable; said guide rail comprised of a plurality of consecutive sections angularly offset with respect to one another and having a generally spiral course for guiding the articles towards the periphery of said turntable and aligning the articles in a single file as the turntable rotates, an outlet track leading away from the turntable and means for pushing the articles off the turntable onto said outlet track; the improvement wherein said guide rail has a plurality of spaced, notch-like indentations connecting the consecutive sections with one another and arranged for engagement by an end portion of the articles guided along said guide rail as said turntable rotates; said notch-like indentations constituting depressions in said guide rail as viewed from said periphery.

4,494,644

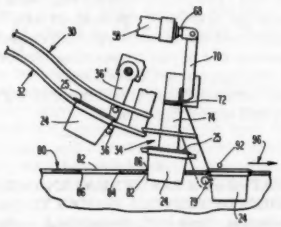
CONVEYOR SYSTEM

Joseph P. Rizzo, Sr., Lester, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 3, 1983, Ser. No. 455,374

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—409 **7 Claims**



1. An improved conveying system for a flanged container said system comprising downwardly inclined, laterally-spaced rails for supporting the flanges of the container as the container moves by gravity toward a lower section of said laterally-spaced rails, a take-away conveyor having apertures therein and being positioned in close proximity to the lower section of

the laterally-spaced rails for permitting a leading downstream edge of a container to engage a leading edge of an aperture with flanges of said container supported by said lower section of the laterally-spaced rails and said container being in a canted orientation with a lower trailing end thereof located above said aperture; the improvement characterized in that the lower section of the spaced-apart rails is mounted for rotational movement about an axis located downstream and below said lower section and additionally comprising actuating means for rotating said movable lower section to positively direct the lower trailing end of the container into the aperture.

4,494,645

TURNING DEVICE

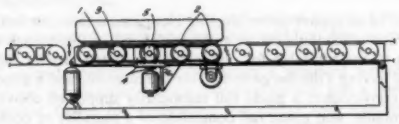
Heinz W. Hessling, Beckum, and Gottfried Weykam, Hesslerstrasse 14, 4700 Hamm 1, both of Fed. Rep. of Germany, assignors to Gottfried Weykam, Hamm, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,984

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128917

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—414 **12 Claims**



1. A turning device for piece goods and bagged goods, comprising

a supporting element located between supplying and withdrawing transport means and turnable about an axis so as to support the goods and turn the goods;

a turnable axle for turning said supporting element, said axle having an upper portion which is hollow and provided with a plurality of openings;

means for turning said axle so as to turn said supporting element;

a transporting element vertically movable relative to said supporting element between a distal position in which said transporting element moves downwardly away of said supporting element whereby said supporting element is able to turn with goods supplied thereonto, and

a proximal position in which said transporting element moves upwardly to said supporting element and transports the goods from said supporting element, said transporting element including a plurality of moveable transporting members;

a plurality of axles which bear said transporting members, one of said axles of said transporting members extending through the respective openings of said hollow upper portion of said axle of said supporting element and bearing a respective one of said transporting members in the center of said supporting element; and

means for vertically moving said transporting element relative to said supporting element.

4,494,646

APPARATUS FOR LOOSENING AN IMBRICATED FORMATION OF PRINTED PRODUCTS OR THE LIKE

Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag Ag, Hinwil, Switzerland

Filed Oct. 19, 1982, Ser. No. 435,326

Claims priority, application Switzerland, Nov. 4, 1981, 7052/81

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—459 **14 Claims**

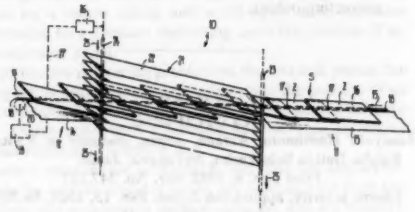
1. An apparatus for loosening an imbricated formation of products, especially printed products, transversely with respect to their surface, comprising:

a product infeed track for infeeding the imbricated formation;

a product outfeed track arranged in spaced relationship from said product infeed track;

a group of mutually spaced overlying track elements arranged between said infeed track and said outfeed track;

means for moving and guiding said group of track elements



substantially transversely with respect to said product infeed and outfeed tracks;

said overlying track elements being spaced from one another in the direction of movement of said track elements; and

conveyor means cooperating with said track elements in order to feed single products from the imbricated formation infed by means of said product infeed track to respective ones of the track elements and to displace the single products along said respective ones of said track elements to the product outfeed track.

4,494,647

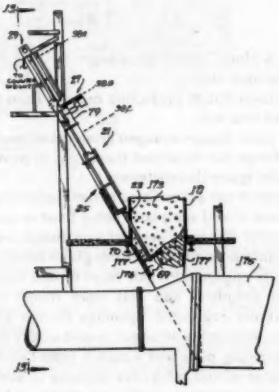
CLEANING ASSEMBLY FOR A DRYER FEED CHUTE

Charles E. Davis, Mulberry, Fla., assignor to CF Industries, Inc., Long Grove, Ill.

Filed Aug. 26, 1982, Ser. No. 411,611

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—494 **6 Claims**



1. A cleaning assembly, such as for a dryer feed chute, comprising: (a) a shaft member; (b) a housing, means rotatably mounting said shaft member in said housing (c) carriage means, (d) means for carrying said housing thereon; (e) drive means for rotating said shaft member relative to said housing; (f) oscillating means for moving said housing and said shaft member in a longitudinal direction, said oscillating means including cycling means for providing movement of said shaft member

from a first position to a second position and thereafter back to said first position thereby completing a cycle, and (g) dislodging means adjacent one end of said shaft means for dislodging feed material in said feed chute.

4,494,648

DEVICE FOR SUPPORTING PRESS BELTS OR ROLLER-SUPPORTED DOUBLE BELT PRESSES

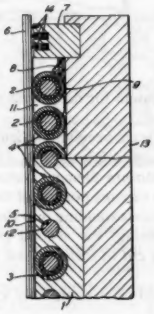
Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,186

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135031

Int. Cl.³ B30B *5/02, 5/04;* B65G *45/02*

U.S. Cl. 198—500 **5 Claims**



1. Device for supporting press belts on a roller-supported double belt press for effecting the application of surface pressure, comprising a roller bed having an inlet end at one end thereof and an outlet end at the opposite end thereof, a press belt arranged to pass over said roller bed in the direction from the inlet end to the outlet end, means for forming a hermetic seal between said roller bed and said press belt, said roller bed comprises a heating plate arranged in spaced relation from said press belt, a plurality of laterally spaced support bearing strips having a first direction and a second direction located on said heating plate and extending in the first direction toward said press belt and in the second direction in the direction between the inlet and outlet ends of said roller bed, said support bearing strips having spaced bearing bores therethrough transversely of the inlet end-outlet end direction of said roller bed and with spaced openings extending therethrough between adjacent said bearing bores, shafts extending across said roller bed transversely of the inlet end-outlet end direction thereof and through said bearing bores extending transversely of the second direction of said support bearing strips with said bearing bores supporting said shafts, a plurality of rollers mounted and serially arranged on each of said shafts, said rollers mounted on adjacent said shafts disposed in spaced relation and the ends of said rollers on adjacent said shafts are offset in the axial direction thereof, filling bodies located in the spaces between said rollers on laterally adjacent said shafts, at least certain of said rollers extending axially through said openings in said support bearing strips with a capillary gap formed between each said roller and the surface of said opening in said support bearing strips through which it extends, said rollers are closely spaced in said roller bed from said heating plate forming a rolling gap therebetween, the surfaces of said support bearing strips and said filling bodies located adjacent to said press belt are spaced from said press belt forming bearing interstices therebetween, and the width of said capillary gaps, rolling gaps, and bearing interstices is limited to a minimum determined by the manufacturing tolerances of the parts forming the device and said roller bed is arranged to receive a lubricant and said hermetic seal permits said lubricant to be flushed through the roller bed passing through said capillary gaps, rolling gaps, and bearing interstices.

4,494,649

ACCUMULATING CONVEYOR

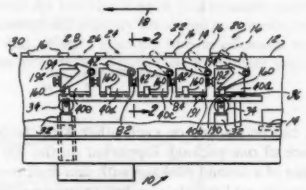
Walter Greenwood, Jr., Dearborn, Mich., assignor to Wisne Automation & Engineering Co., Novi, Mich.

Filed Jun. 3, 1982, Ser. No. 384,482

The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—718 **8 Claims**



5. An apparatus for selectively activating the means for transferring an article engaging means mounted on a plurality of reciprocal modules in an accumulating conveyor between raised and lowered positions in response to the presence of articles in article support stations in which pivoting of an actuating member mounted on each module activates the transferring means within each module to raise the associated article engaging means, the apparatus comprising:

means, associated with each article support station, for sensing the presence of an article in the adjacent advanced article support station;

a member pivotally mounted on the end of each article sensing means and movable with said article sensing means between raised and lowered positions;

a stop member secured to the accumulating conveyor and adapted to engage said member when said member is in the lowered position as said modules move in one direction;

said stop member holding said member in a fixed position when said member is in the lowered position such that said member engages and causes pivotal movement of said actuating member; and

said member including means for preventing vertical movement of said member after it has engaged said stop member.

4,494,650

DISPLAY PACKAGE

John F. Cullen, Demarest, N.J., assignor to Dimensional Merchandising, Inc., West Caldwell, N.J.

Filed Aug. 18, 1983, Ser. No. 524,388

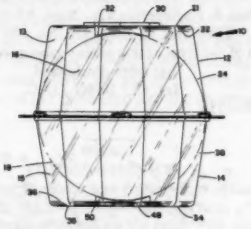
Int. Cl.³ B65D *85/00, 21/02, 6/00, 25/00*

U.S. Cl. 206—45.34 **10 Claims**

1. A display package, comprising:

a first bowl-shaped transparent body member; a second bowl-shaped transparent body member, each of the first and second body members having an open end and an internal cavity, said first and second body members being positioned with the respective open ends adjacent to each other to form a chamber for a ball; connecting means for connecting the first and second body members to each other to form said chamber, said first body member forming an upper portion of the package and the second body member forming a bottom portion of the package, said top portion of the package including a top supporting surface for supporting a package to be stacked thereon, the bottom portion of the package including a bottom base surface for the package; one of said top supporting surface

and bottom base surface including a male portion of a male-female member and the other of said top supporting surface and said bottom base surface including a female portion of the male-female member, whereby said packages can be stacked on each other with the bottom base surface of one package supported on the top supporting surface of a second package with said male member being inserted in said female member to prevent lateral movement between the packages.

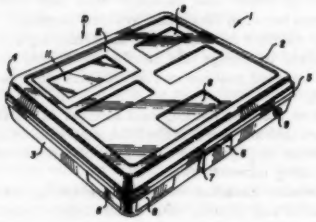


4,494,651

ELECTRICALLY CONDUCTIVE ANTI-STATIC WORK STATION

Donald A. Malcolm, Roanoke Rapids, N.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Apr. 19, 1983, Ser. No. 484,321
Int. Cl.³ B65D *81/02, 65/18;* **H05F** *3/02*
U.S. Cl. 206—328 **13 Claims**



1. A portable work station adapted to transport a device sensitive to electrical forces, said work station comprising:

a double walled electrically conductive enclosure defining an orifice and an interior, said enclosure comprising electrically conductive window means for viewing said interior through said orifice;

wherein said electrically conductive window means comprises:

window recess means completely surrounding said orifice and having at least one hole located therein; a sheet of optically transparent electrically non-conductive material located in said window recess means and completely covering said orifice, said sheet having an electrically conductive surface; and

an electrically conductive frame-like structure maintaining electrically conductive communication between said enclosure and said surface comprising:

at least one leg, said leg being inserted into said hole and a sheet retaining indent retaining engaging said sheet to said window recess means;

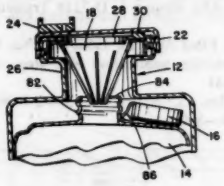
whereby the interior of said closure is shielded from external electrical forces.

4,494,652

CONTAINER FOR SHARPS

Ralph E. Nelson; Ann L. Nelson; Evelyn J. Bogner, and Paul M. Bogner, all of Newport Beach, Calif., assignors to Winfield Industries, San Diego, Calif.

Filed Jul. 1, 1983, Ser. No. 510,050
Int. Cl.³ A61M *5/32;* **B02C** *19/12;* **B65F** *7/00;* **B26F** *3/00*
U.S. Cl. 206—366 **35 Claims**



1. A disposal system for dangerous materials comprising in combination:

a container having a receiving opening and defining a support portion,

a thin walled closure element having a first portion supported by the support portion of the container and having a second portion extending into the container through the receiving opening, the second portion of said closure element being cut to form at least a pair of resilient inner flaps, and

a cover supported on the container for closing the receiving opening,

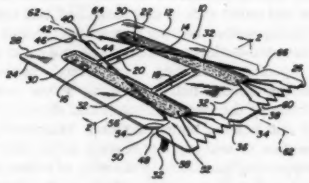
the container and the cover having detents engageable with each other to retain the cover in locked relationship on the container.

4,494,653

CONTAINER FOR SURGICAL PATTIES

Joseph J. Praderio, Quincy, Mass., assignor to Codman & Shurtleff, Randolph, Mass.

Filed Apr. 18, 1984, Ser. No. 601,455
Int. Cl.³ A61F *13/00;* **B65D** *1/36, 81/36, 85/62*
U.S. Cl. 206—370 **11 Claims**



1. A container for a plurality of surgical patties comprising:

a base and a peripheral edge;

a recess formed in said base, said recess adapted to receive a plurality of patties each having a locating string attached thereto;

a portion of said edge adjacent one end of said recess having a corresponding plurality of count slots therein, each slot adapted to receive the locating string of one of said plurality of patties;

another portion of said edge disposed adjacent the other end of said recess including a collection slot for receiving all of said strings;

a tie-down slot disposed on a third portion of said edge spaced transversely of said recess from said collection slot and positioned such that a locating string extending from said collection slot to said tie down slot extends across said

recess so as to permit said locating strings to act as a means for holding said plurality of patties within said recess;

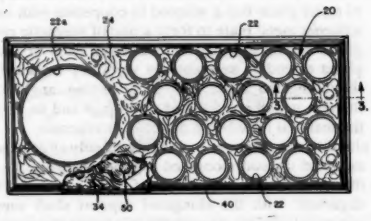
said recess adapted for receiving a wetting solution for said patties.

4,494,654

SALAD BAR INSERT

Arthur G. Gunther; Douglas H. Willsie, and Leo D. Hawkins, all of Wichita, Kans., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Nov. 3, 1982, Ser. No. 438,932
Int. Cl.³ B65D *1/34*
U.S. Cl. 206—562 **9 Claims**



1. In a salad bar of the type comprising a table and a plurality of salad food containers, the improvement comprising:

a salad bar insert which defines a plurality of openings and a display region situated between the openings, each of the openings sized and shaped to receive a respective one of the salad food containers, the openings distributed such that the display region is visible between the openings, the display region having an upper surface which is adapted readily to be wiped clean;

a plurality of three-dimensional salad food replicas;

means for retaining the salad food replicas in the salad bar insert beneath the upper surface of the display region such that the upper surface protects the replicas from dirt, said upper surface being transparent such that the replicas are visible from above the salad bar insert through the upper surface; and

means for retaining the insert in place on the table.

4,494,655

SORTER WITH AUTOMATIC REMOVAL MECHANISM

Tetsuo Horii, Kawasaki, and Takeshi Kohno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 17, 1982, Ser. No. 349,688
Claims priority, application Japan, Feb. 18, 1981, 59-21684[U]
Int. Cl.³ B07C *3/06*
U.S. Cl. 209—569 **1 Claim**

1. A sorter for sorting documents having sorting information contained thereon comprising:

conveying means for sequentially conveying said documents along a predetermined sort path;

a stacking section including at least one row of stationary stacking bins disposed along said sort path, said row of stacking bins including plural primary stacking bins and an auxiliary stacking bin each for receiving a stack of sorted documents;

reading means disposed along said sort path upstream of said stacking section for reading said sorting information on said documents;

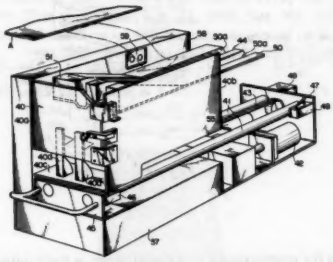
sorting means operatively connected to said reading means for assigning said documents to respective ones of said stacking bins to thereby stack and sort said documents;

a transfer section including at least one row of transfer bins, said transfer bins being movable relative to said primary and auxiliary stacking bins so as to be registrable therewith to receive said stacked and sorted documents therefrom;

plural primary removing means operatively associated with each of said primary stacking bins for transferring said sorted and stacked documents in said primary stacking bins to a predetermined first one of said transfer bins;

auxiliary removing means operatively associated with said auxiliary stacking bin for transferring said sorted and stacked documents in said auxiliary stacking bin to a predetermined second one of said transfer bins; and

control means operatively connected to each said primary removing means and said auxiliary removing means for sequentially (a) determining when a selected number of documents are stacked in each said primary stacking bin, (b) operating said primary removing means of a respective one of said primary stacking bins in response to said selected number being determined to transfer said selected



number of stacked documents therein to said predetermined first one of said transfer bins while simultaneously diverting those documents assigned to said respective one of said primary stacking bins by said sorting means to said auxiliary stacking bin, (c) determining when said selected number of stacked documents have been transferred from said respective one of said primary stacking bins to said predetermined first one of said transfer bins, (d) operating said auxiliary removing means, in response to determining the completion of said transfer of stacked documents in said respective one of said primary stacking bins to said predetermined first one of said transfer bins, to transfer the documents stacked in said auxiliary stacking bin to said predetermined second one of said transfer bins while simultaneously permitting said documents assigned to said selected one of said primary stacking bins by said sorting means to once again be stacked in said selected one of said primary stacking bins.

4,494,656

DOWN AND STUCK WARE INSPECTION METHOD AND APPARATUS

Timothy W. Shay, and Mark P. Claypool, both of Horseheads, N.Y., assignors to Powers Manufacturing, Inc., Elmira, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,176
Int. Cl.³ B07C *5/00*; C03B *35/00*
U.S. Cl. 209—524 **21 Claims**

1. Apparatus for inspecting moving spaced objects, comprising:

radiant energy means for directing radiant energy along a path towards the objects,

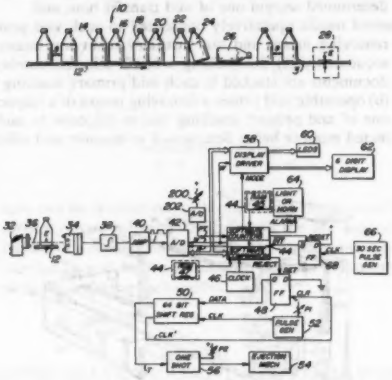
a sensor disposed with respect to the radiant energy means and the objects so as to receive radiant energy and produce an output proportional to the amount of radiant energy received, the amount of radiant energy received being dependent on the presence or absence of an object along the path of the radiant energy,

means for detecting a change in the sensor output due to the presence or absence of an object along the path of the radiant energy,

means for computing the lapse in time between successive detected changes in the sensor output,

means for periodically computing an average of said computations of said lapses in time,

means for periodically computing one or more thresholds in proportion to the average,



means for comparing a computed lapse in time with said one or more thresholds, and

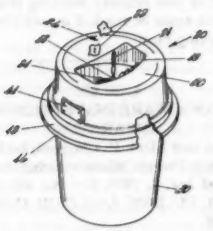
means for actuating a container ejection mechanism based on the comparison of the computed lapse in time with said one or more thresholds.

4,494,657

INTEGRAL HOUSING MEMBER FOR REMOVING MAGNETIC ARTICLES FROM A FLOW OF LOOSELY PACKED MATERIAL AND METHOD

Jerry Oldenkamp, 3202 Campanil Dr., Santa Barbara, Calif. 93109

Filed Dec. 17, 1982, Ser. No. 450,658
Int. Cl.³ B07C 5/344
U.S. Cl. 209—636 **9 Claims**



1. An integral housing member for removing magnetic articles from a flow of loosely packed material containing a mixture of magnetic articles and non-magnetic articles comprising

an inlet cover including means defining spaced opposed bracket receiving surfaces adapted to be positioned on the top opening of a trash receptacle, said inlet cover including means defining a hollowed-out central area which terminates in an opening at the bottom thereof having substantially the same diameter as the top opening of a said trash receptacle adapted to receive the inlet cover, said inlet cover including means defining an elongated opening located substantially parallel to and in alignment with the bottom opening;

an elongated support shaft having a central opening located at each end thereof operatively mounted in said hollowed-out central area of the inlet cover and below and substantially parallel to the axis of said elongated opening, said elongated support shaft being adapted to be rotated about its longitudinal axis;

a plurality of shaped metal plates having an aperture formed in the center thereof which is adapted to receive and have the elongated support shaft passed therethrough, said plurality of metal plates being positioned in coaxial spaced parallel relationship with each other and in coaxial alignment with and mounted relative to said elongated support shaft so as to be rotatable therewith, each of said plurality of metal plates being adapted to cooperate with one other adjacent metal plate to form a pair of magnetic retrieving plates having a space therebetween, each of said metal plates extending substantially vertically outwardly from the elongated shaft and each having angular points thereon which are adapted to engage and be rotated by the material flow being directed thereacross;

a plurality of a magnetic members coaxially aligned with and mounted on said elongated support shaft and located in the space between each pair of metal plates and in axial alignment with the elongated support shaft supporting said metal plates, said plurality of magnetic members each extending substantially vertically outwardly from said elongated support shaft with the periphery thereof spaced a predetermined distance from the periphery of said metal members, said magnetic members being formed of a magnetic material having a magnetic flux density of sufficient magnitude to magnetize each metal plate to produce a preshaped magnetic field emanating therefrom and thereacross to attract and remove magnetic articles responsive to the magnetic field from a material flow being directed across said metal plates and to hold such removed magnetic articles against said metal plates as the metal plates move relative to the material flow being directed thereacross;

a plurality of non-magnetic spacing members coaxially aligned with said elongated support shaft and positioned between each set of the plurality of shaped metal plates to form a spacing between each pair of magnetic retrieving plates;

a support means operatively coupled to the interior of the inlet cover and mounted relative to the elongated opening in the hollowed-out central area to position said elongated support shaft and said plurality of shaped metal plates, magnetic members and non-magnetic members mounted on the elongated support shaft at a preselected distance from and substantially parallel to said elongated opening and for rotatably supporting the same in a selected position relative to said elongated opening as a said material flow is being directed across said magnetic retrieving plates and to hold such removed metal articles thereagainst as the same is moved relative to the material flow being directed thereacross, said supporting means comprising a pair of brackets each having a mounting plate and a support channel, said mounting plated being adapted to be affixed to the bracket receiving portion of said inlet cover and said support channel being located in an opposed spaced relationship to said mounting plate and adapted to rotatably support said elongated support shaft, each of the support channels of the brackets including a support aperture therein;

a first and second end cap terminating in a disc-shaped plate which is of a greater external radial dimension than that of the elongated support shaft, each of said end caps being adapted to be force-fitted into the central opening at each end of the elongated support shaft, each of said end caps having a central aperture formed therein; and

a pair of shoulder-type threaded fasteners located one at

each end of the end caps and positioned to pass through the support aperture of its respective bracket and into the central aperture of its respective end cap to rotatably support the elongated support shaft on the support channel at a predetermined space from the elongated opening in the inlet cover.

4,494,658

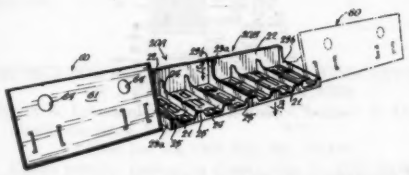
MODULAR DISPLAY FOR CIGARETTE PACKS

Virgil S. Simon, Glenview; Marvin L. Adenau, Hoffman Estates, and John S. Skalski, Hanover Park, all of Ill., assignors to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Jul. 15, 1983, Ser. No. 514,346

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—49 R **16 Claims**



1. A modular display apparatus for merchandise which is displayed and sold in small packages, said apparatus comprising, in combination:

display tray means adapted to hold a plurality of packages of merchandise, said display tray means having a bottom wall, end walls and a rear wall;

means for fixing said tray means at a desired location in a retail shop;

an advertising sign frame adapted to receive and hold an advertising sign;

a support member for said advertising sign frame;

resiliently interengaging elements on said support member and on said advertising sign frame for detachably securing the advertising sign frame to the support member;

and resiliently interengaging components at an end wall of said tray means and at a side of said support member for detachably securing said support member to said tray means with the advertising sign frame immediately adjacent to said end wall of said tray means.

4,494,659

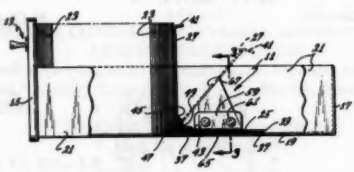
COMPRESSOR FOR MICROFICHE CARDS AND THE LIKE

Arthur T. Spees, Villa Park, Calif., assignor to Visu-Flex Company, Pico Rivera, Calif.

Filed May 3, 1983, Ser. No. 491,088

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—51 **17 Claims**



1. A compressor for cards in a drawer having a magnetic region, said compressor comprising:

a base positionable in the drawer;

a compressor member;

means for mounting the compressor member on the base for movement relative to the base between an extended position in which the compressor member can support the cards and a retracted position in which the compressor member is retracted from the cards;

resilient means for biasing the compressor member toward the extended position;

a first magnet section on said base for cooperating with the magnetic region of the drawer for magnetically retaining the compressor on the drawer with a first magnetic force; and

a second magnet section on the base for retaining the compressor member in said retracted position with a second magnetic force against the biasing force of the resilient means whereby by applying a releasing force to the compressor member, the biasing means can move the compressor member to the extended position.

4,494,660

HOLDING DEVICE FOR PENCILS AND THE LIKE

Robert S. Hansen, 2 E St., Santa Rosa, Calif. 95404

Continuation of Ser. No. 874,415, Feb. 2, 1978, Pat. No. 4,403,699. This application Sep. 13, 1983, Ser. No. 532,202

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—69.1 **9 Claims**

1. In a device for holding elongated objects: a mesh of oriented netting comprising a plurality of intersecting flexible strands joined together in predetermined positions to form a plurality of openings, said strands tending to return to their predetermined positions when moved therefrom, the mesh being arranged such that the objects can extend through at least two of the openings and deflect the strands defining said openings whereby the objects are gripped and held solely by the deflected strands as they tend to return to their predetermined positions, a generally planar rigid base, and means securing the lower portion of the mesh to the base to form a self-supporting structure in which the mesh extends upwardly from the base and stands freely in the shape in which it is arranged, said base having a lateral extent generally coextensive with the mesh and being of sufficient weight to prevent the device from falling over due to the weight of the elongated objects gripped by the strands, there being no objects within the space bounded by the mesh and the base other than the elongated objects themselves, the entire support for the objects being provided by the mesh and the base.

4,494,661

STORAGE DEVICE

Kurt Krusche, Frankfurt am Main, Fed. Rep. of Germany, assignor to Allstar Verbrauchsguter GmbH & Co., KG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,259

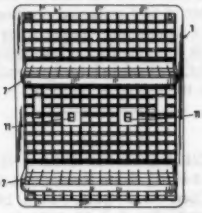
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 8106304[U]

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—87 **7 Claims**

1. A storage device supportable on vertical and horizontal surfaces and comprising a grid-like basic component in the form of a grating having a frame, at least one row of openings, and spacer means for spacing a rear plane of said basic component from a support surface; at least one additional component

attached to said basic component by means for releasably anchoring said basic and additional components together; said grating openings all being of substantially like depth as defined by web portions of substantially like thicknesses and extending substantially perpendicularly from said rear plane; said anchoring means comprising at least one rearwardly extending portion of said additional component, said portion being resiliently elastic and having a configuration anchorably mateable with



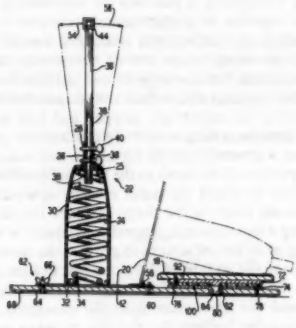
an opening of said grating, and wherein the additional component is a hook unit comprising a plate on the front of which two pairs of retaining members are provided, the retaining members forming anchoring elements for the hook unit, the retaining members being resiliently elastic plates having detent formations engageable with the rear of the grating, the plates being so dimensioned and spaced that each plate engages in a respective one of four adjacent openings of the grating.

4,494,662

MOUNTED SPRING DEVICE FOR RESISTING FLEXING

Ronald S. Clymer, 1914A W. Pratt Blvd., Chicago, Ill. 60626

Filed Mar. 4, 1983, Ser. No. 472,011
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—134 **8 Claims**



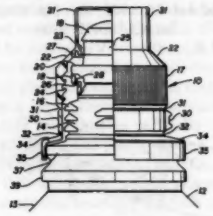
1. An exercise device comprising:
a base means adapted for attachment to a support;
first spring means including a first end connected to said base, said first spring means having a second end;
a handle connected to and extending from said second end of said first spring means;
said first spring means flexing and storing and releasing energy in response to the application by a user to and removal of force from said handle;
a support, said base means attached to said support, said support adapted to rest on a floor and comprising feet of a material to provide friction with respect to a floor, a first section mounting said base, said support including a second section which includes a portion for supporting a person when the person grasps said handle; and
second spring means connecting said portion for supporting a person to permit biasing of said portion during bidirectional pivotal movement of said portion.

4,494,663

STERILE SOLUTION CONTAINER

Francois X. Bertaud, Libertyville, and Hans J. Siedler, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 5, 1984, Ser. No. 568,325
Int. Cl.³ B65D *41/32*
U.S. Cl. 215—232 **20 Claims**



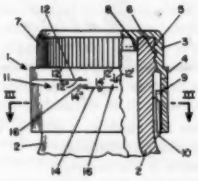
1. A tamperproof closure system for molded plastic containers having a threaded container neck including a threaded cap capable of being secured to said container neck without threadable engagement comprising:
a screw-type cap member having internal threading, a removal portion and skirt portion;
external threading complementary to said internal threading extending from said container neck;
an abutment surface presented by said container neck for sealable contact with cap skirt portion;
a breakaway portion defined by said container neck;
a contact portion defined by said cap for contact with said breakaway portion; and
captive means operatively associated with said cap and said container neck;
said cap and said container neck constructed and arranged so that when said cap skirt portion is sealed to said abutment surface, said threading is placed in a spaced apart position and when said removal portion is removed said threads will engage;
whereby when said threads are engaged, said contact portion of said cap will engage said breakaway portion of said container neck.

4,494,664

TAMPER EVIDENT CLOSURE

Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala, S.p.A., Alessandria, Italy

Filed Feb. 28, 1983, Ser. No. 470,535
Claims priority, application Italy, Mar. 9, 1982, 20041 A/82
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **20 Claims**



1. A tamper evident closure and container combination including a closure having an upper cap portion, a lower ring

portion, and an intermediate weakened area, the weakened area being defined by nonaligned cuts separated by unsevered locations, the combination further comprising interacting means on the ring and container for blocking movement of the ring in a closure opening direction, the interacting means for blocking movement comprising inwardly projecting means on the ring and outwardly projecting means on the container, the inwardly and outwardly projecting means being axially located to be in abutting relationship when the closure is in place on the container, the cuts and unsevered locations defining cam surfaces upon separation of the cap and ring effective to cam the ring downward until the inwardly projecting means on the ring is below the outwardly projecting means on the container; whereby the ring and cap separate the weakened area to leave behind the ring and, the ring is held captive on the container at a lower location than its previous, unseparated position.

4,494,665

DEVICE FOR PREVENTING THE SELF-UNSCREWING OF A CAP FROM A CONTAINER

Myrtil B. Lehmann, Saint-Cloud, France, assignor to Chanel, Neuilly-sur-Seine, France

Filed Jan. 20, 1983, Ser. No. 459,594
Claims priority, application France, Jan. 22, 1982, 82 00973
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—330 **5 Claims**

1. A container comprising:
a neck having therein an access opening;
first screwthread means formed on said neck and extending downwardly from the vicinity of said opening;
an annular check ring formed on said neck below said first screwthread means; and
a projection means formed integral with and extending upwardly from said annular check ring toward said first screwthread means, said projection means being so positioned that when a screw cap is fully engaged on said first screwthread means, the lower portion of said screw cap will press against said projection means and thereby secure said screw cap on said container neck.

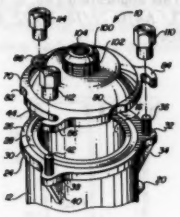
4,494,666

PRESSURE CONTAINMENT VESSEL APPARATUS FOR LEAKING GAS CYLINDER

Newell J. Cooper, 14023 N. Medinah Dr., Phoenix, Ariz. 85022, and N. Jeffrey Cooper, 4424 W. Paradise La., Phoenix, Ariz. 85023

Filed Nov. 10, 1983, Ser. No. 550,367
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—3 **10 Claims**

1. Apparatus for containing a leaking pressurized cylinder, comprising, in combination:
cylinder means for receiving the leaking gas cylinder, including
an outwardly extending first flange,
a plurality of spaced apart ears on the first flange,
a threaded stud on each ear, and
a nut on each threaded stud; and
cap means defining a closure for the cylinder means and adapted to be secured to the first flange of the cylinder means, including
a dome,
a second flange secured to the dome and adapted to be disposed on the first flange,
a plurality of arms adapted to be disposed on and secured to the ears of the first flange by the studs and nuts, and



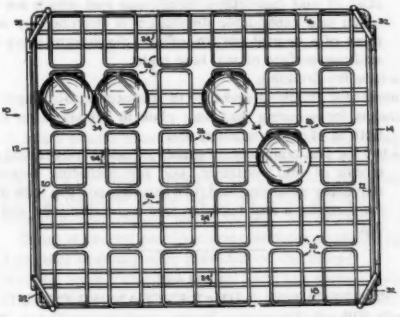
a plurality of recesses adapted to allow the cap means to clear the nuts on the studs upon the loosening of the nuts from the arms and the rotating of the cap means to align the recesses with the studs and nuts to remove the cap means from the cylinder means.

4,494,667

LENS TRAY

John M. Griffith, Richmond, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Mar. 23, 1983, Ser. No. 478,174
Int. Cl.³ A45F *3/14*; B65D *21/00*
U.S. Cl. 220—19 **5 Claims**



1. A lens tray for holding lenses aligned horizontally in a lateral array comprising:
a rectangular frame having front, back and side portions;
parallel supporting pairs of bars spaced from each other and extending transversely between said side portions of the rectangular frame;
a plurality of lens support members supported by said pairs of bars for holding lenses thereon, said lens support members being generally of rectangular shape having a flat bottom and inclined sickle shape end portions, said portions being inclined at about 45° from the horizon for holding the edges of the outer convex surface of the lenses;
a pair of handles for carrying the tray positioned on each of said side portions of the rectangular frame forming an angle of about 99° with said frame; and
a pair of upwardly pointing tray support fingers positioned on the inside of said handles to receive and hold the rect-

angular frame of another tray when trays are stacked upon each other.

4,494,668

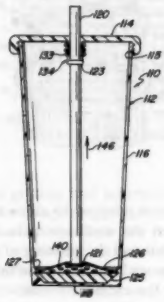
STACKABLE NON-SPILLABLE DRINKING CONTAINER

Edward A. Lottick, 41 Gershom Pl., Kingston, Pa. 18704

Continuation-in-part of Ser. No. 480,565, Mar. 30, 1983, Pat. No. 4,441,640. This application Feb. 2, 1984, Ser. No. 575,201

Int. Cl.³ A47G *21/18, 19/22*; B65D *47/04*

U.S. Cl. 220—90.4 **10 Claims**



1. A non-spillable drinking container, comprising:

a container of linearly increasing cross-section provided with an open mouth at its larger end and a closed bottom at or near its smaller end;

a base plate with an expandable diaphragm mounted over substantially one surface of said base plate, said expandable diaphragm being provided with perforations therethrough which are normally closed in the unexpanded state of said expandable diaphragm and which are open when said expandable diaphragm is stretched by movement of a central portion of said diaphragm away from said one surface of said base plate;

a tube for drinking;

means for attaching said tube to said expandable diaphragm;

means for securing said base plate in juxtaposition to the bottom of said container; and

a top for said container securably mountable over said open mouth of said container, said top including means for moveably mounting said tube through said top with means for forming a seal between said moveable tube and said top.

4,494,669

STOPPER FOR A HEAT EXCHANGER CIRCUIT

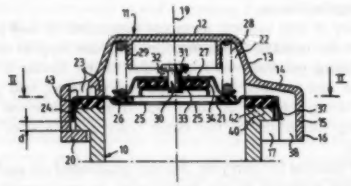
Denis Villeval, Maurepas, France, assignor to Valeo, Paris, France

Filed Dec. 7, 1982, Ser. No. 447,683

Claims priority, application France, Dec. 14, 1981, 81 23316

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—204 **9 Claims**



1. A stopper adapted to be fixed to the end of an inlet tube to a heat exchanger circuit for an internal combustion engine, the stopper comprising a body having a top portion, a cylindrical skirt provided with bayonet-fixing means adapted for fixing the stopper to the end of the inlet tube, a plate located within said body which is axially movable between two end positions, end stops on said stopper which define the end positions, and a set of rated overpressure and underpressure valves housed in said stopper body between the top portion and said plate, wherein said plate is in one of said end positions and is spaced apart from the end of the inlet tube when the stopper is in an intermediate position between its position for fully closing the inlet tube and its position for opening the inlet tube, thus forming a gap between the end of the inlet tube and said plate, which gap provides communication between the outside and the inside of the exchanger circuit, and wherein said plate is in the other of said end positions and is pressed in a sealed manner to the end of the inlet tube when the stopper is in the fully closed position, thus preventing communication between thef outside and inside of the exchanger circuit, other than through the overpressure or underpressure valve.

4,494,670

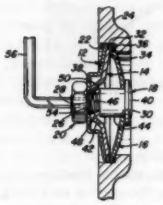
REMOVABLE FREEZE PLUG

Sam A. Barone, 1205 Ryson, Wheaton, Ill. 60187

Filed Aug. 26, 1983, Ser. No. 526,652

Int. Cl.³ B65D *53/04*

U.S. Cl. 220—235 **3 Claims**



1. A core plug assembly for use in circular core holes in engine blocks, comprising in combination

a shell having an annular rim portion,

a concavo-convex expander disk having an external diameter which is slightly less than the internal diameter of said rim portion,

said disk being disposed with said shell in coaxial relationship therewith with the concave side of said expander disk facing toward said shell,

a rigid brace disk seated within said shell between said expander disk and the interior face of said shell,

said shell, said side expander disk and said brace disk having mutually aligned, centrally disposed openings therethrough,

a headed bolt extending through said openings with the head of said bold abutting the convex face of said expander disk,

a nut threadedly disposed on the shank of said bolt adjacent to the exterior face of said shell,

said bolt having a non-circular, axial blind hole in said shank at the end thereof opposite the head, said hole being sized to accept a complementary sized tool therein, and

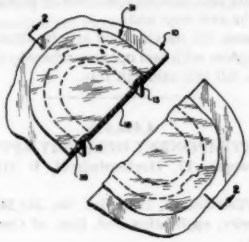
cooperating stop means on said bolt and on said brace disk for limiting the amount of movement of said head toward said shell as said nut is tightened onto said bolt.

4,494,671

AUTOMOBILE BODY PANEL HOLE CLOSURE

Dan T. Moore, III; Michael F. Fischer, both of Cleveland Heights, and Laurie S. Herceg, Lakewood, all of Ohio, assignors to The Dan T. Moore Co., Cleveland, Ohio

Filed Jan. 12, 1984, Ser. No. 570,184
Int. Cl.[3] B65D *51/18*
U.S. Cl. 220—256 12 Claims



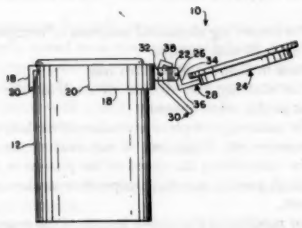
1. A closure for a hole defined by a panel, such as a body panel in an automotive vehicle, comprising:
a plate having dimensions complementary to the hole, and a top and bottom side;
a gasket having a top side and a bottom side;
the bottom side of said gasket cooperating with the top side of said plate;
means for securing said gasket to said plate;
means to secure the plate to said panel;
said gasket having dimensions somewhat larger than the hole to overlie the panel defining the hole;
the gasket having a thin, bottom side low melt compound layer of a high melt index and a thicker top side compound layer of a lower melt index, the total thickness of said gasket ranging from about 0.030 inch to about 0.065 inch; and
upon heating, said gasket causing a substantially liquidtight seal between said plate and said panel.

4,494,672

FLIP TOP CAN COVER

Robert E. Pearson, 151 Osceola Dr., New Port Richey, Fla. 33553

Filed Aug. 12, 1983, Ser. No. 522,539
Int. Cl.[3] B65D *43/26*
U.S. Cl. 220—263 3 Claims



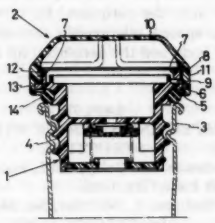
1. A closure means for a potable container of the type having a tab the removal of which produces a permanent opening in the lid of said container, comprising, in combination,
a closure member having a configuration and dimension substantially equal to the configuration and dimension of the lid of said container,
a collar member adapted to snugly and releaseably engage said container about its periphery.
an ear member fixedly secured to said collar member in radial relation to the vertical axis of symmetry of said container,
a rigid deflection plate member fixedly secured to said closure member and pivotally secured to the distal free end of said ear member,
a rigid lever member pivotally secured to said ear member radially inwardly of the distal free end of said ear member,
said lever member adapted to abuttingly engage and displace said deflection plate member and hence said closure member attendant pivoting of said lever member about its pivotal mount when said closure member is in its closed disposition.

4,494,673

SAFETY PLASTIC FILLER NECK CAP

Hideki Hiraishi, Okayama, Japan, assignor to O M Industrial Co., Ltd., Okayama, Japan

Filed Feb. 7, 1984, Ser. No. 577,668
Claims priority, application Japan, May 4, 1983, 58-78751
Int. Cl.[3] B65D *41/04*
U.S. Cl. 220—288 1 Claim



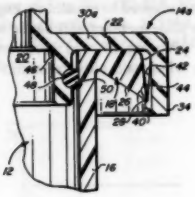
1. A safety plastic filler neck cap for vehicle comprising:
a screw body having a screw portion fitting with a screw pitch of a fuel feeder neck pipe of the vehicle comprising:
a flange disposed on the top of the screw portion;
engaging/disengaging teeth formed by extending the flange at several positions along its outer circumference;
a circular standing edge provided on the flange;
latching teeth formed at several locations along an outer circumference of the circular standing edge, which are to be latched in a reverse screwing direction; and
cuts corresponding to the latching teeth, which are formed underneath the latching teeth; and
a cap capable of engaging with and disengaging from the screw body comprising:
a rotation flange disposed on top of the cap;
a round cover edge for covering the circular standing edge as well as the engaging/disengaging teeth of the screw body;
latches provided at an upper portion of an inner surface of the round cover edge; and
an anchoring groove formed in a lower portion of the inner surface of the round cover edge;
whereby when the cap is engaged with the screw body, the latching teeth are caused to be engaged with the latches, while at the same time, the engaging/disengaging teeth fit in the anchoring groove, respectively, thereby effecting the combination of the cap and the screw body into a single unit.

4,494,674

RESEALABLE CLOSURE AND CONTAINER STRUCTURE

G. Wayne Roof, P.O. Box 1116, Coolidge, Ariz. 85228

Filed Jan. 30, 1984, Ser. No. 575,151
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 20 Claims



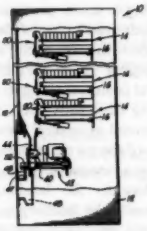
1. A container structure comprising in combination:
(a) container body means having an open top defined by an endless rim;
(b) closure lid means demountably mounted on said container body for closing the open top thereof, said closure lid having an endless depending peripheral lip which surrounds the rim of said container body; and
(c) at least a pair of latching lug means in spaced relationship on the inwardly facing surface of the peripheral lip of said closure lid for releasably engaging the rim of said container body, said pair of latching lug means each extending inwardly from the peripheral lip of said closure lid to provide a spaced relationship between the rim of said container body and the peripheral lip of said closure lid.

4,494,675

ARTICLE DISPENSING MACHINE WITH ANTI-THEFT STRUCTURE

Richard R. Stutsman, Mt. Baldy, Calif., assignor to Vertx Corporation, Salt Lake City, Utah

Filed Jun. 1, 1982, Ser. No. 384,144
Int. Cl.³ G07F *11/42*
U.S. Cl. 221—13 13 Claims



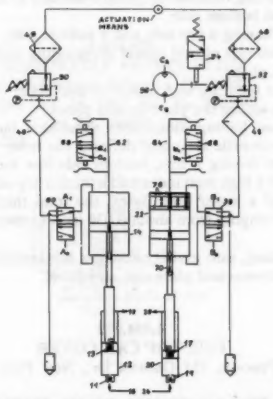
13. A dispensing machine comprising:
a box-like housing having a front panel;
a plurality of receptacles arranged within said housing, each of said receptacles adapted to contain a plurality of articles to be dispensed and having a front end facing said front panel, an open space through which said articles can fall being defined between said receptacles and said front panel;
an article means associated with each of said receptacles and disposed at said front end thereof for releasing said articles sequentially upon actuation thereof;
an elongated article receiving chamber extending horizontally behind said front panel and beneath said receptacles and positioned so that articles released from said receptacles by said releasing means fall into said chamber;
an exit tray beheath said chamber from which said articles can be removed;
an opening above said exit tray through which said articles can fall into said exit tray, said opening being offset laterally from said chamber;
conveyor means extending along the bottom of said chamber for moving said articles horizontally along said chamber toward the exit tray; and
delivery means for moving said articles from said chamber into alignment with said opening whereby said articles are caused to fall into said exit tray.

4,494,676

MULTI-COMPONENT DELIVERY APPARATUS

Manfred Berweger, 17, Hortensiadreef, B 2180 Kalmthout, Belgium

Filed Jul. 15, 1981, Ser. No. 283,560
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029554
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—63 7 Claims



1. A multi-component delivery apparatus comprising:
piston pumps having preset displacement volumes,
operating means coupled to each of said pumps,
means for supplying component fluids to each of said pumps and,
means for removing measured amounts of component fluids from each of said pumps,
characterised in that the apparatus has:
means for starting the strokes of each of the connected pumps at the same moment,
means for assuring complete execution of each stroke in each pump before the beginning of any next stroke,
means for controlling the speed of the pistons in each pump so that all pumps end their respective strokes at the same moment,
means for modifying the stroke length of the pumps without causing pulsation,
means for adjusting the position of stroke reversal to a modified stroke end position;
wherein the operating means comprises piston motors being coupled to the piston pumps via their piston rods and having spacer means for adjusting the stroke length at one or at both ends of the pump cylinders characterised in that the spacer means consists of two plates which can be adjusted to any required distance from each other and which are sealed against the cylinder wall and against conduits traversing the spacer means thus creating a void

cylinder area where virtually no actuation means is absorbed at the stroke beginning;

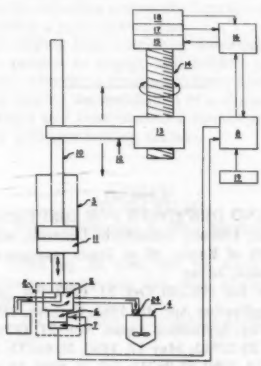
said spacer means characterised in that one of the plates is represented by a cylinder top plate and the second plate is represented by an adjustable cylinder head which is sealed against the cylinder wall and against conduits and rods traversing the spacer means and which can be set to different stroke lengths from outside the cylinder without having to dismantle the motor.

4,494,677

APPARATUS FOR DELIVERING ACCURATE VOLUME OF LIQUID

Allan F. Falcoff, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1982, Ser. No. 444,085
Int. Cl.³ B67D *5/14*
U.S. Cl. 222—63 **6 Claims**



1. An apparatus for delivering an accurate volume of fluid from a supply vessel to a mixing vessel which comprises:

a gear pump capable of pumping an accurate volume of fluid from the supply vessel into the mixing vessel;

a servo motor with a shaft coupled to the gear pump which drives the pump;

a tachometer connected to the motor for measuring motor speed;

a resolver connected to the motor shaft for measuring angular shaft rotation;

a motor controller amplifier means electrically connected to the tachometer and resolver and receives a signal from the tachometer on motor speed and a signal from the resolver on shaft rotation and thereby controls the motor and output of the gear pump;

a computer capable of storing programs electrically connected to the motor controller amplifier means;

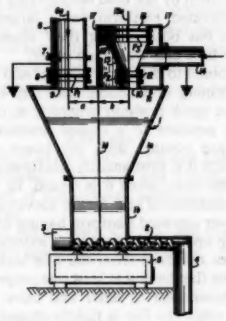
wherein the computer through the motor controller means activates the motor which drives the gear pump a predetermined number of rotations directly related to the volume of fluid to be charged into the mixing vessel and pumps the volume of fluid from the supply vessel to the mixing vessel.

4,494,678

APPARATUS FOR COMPENSATING A PRESSURIZED VESSEL ON A SCALE

Karl-Heinz Klein, Gelnhausen-Hailer, Fed. Rep. of Germany, assignor to K-Tron Soder A.G., Niederlenz, Switzerland

Filed Feb. 23, 1982, Ser. No. 351,377
Claims priority, application Switzerland, Feb. 23, 1981, 1174/81
Int. Cl.³ G01G *13/00*
U.S. Cl. 222—77 **9 Claims**



1. A weighing system comprising:

a scale;

a container for receiving material coupled to said scale such that said scale provides weight measurements of said container and any material therein;

a first inlet coupled to said container for providing material to said container and having a first cross-sectional area;

a second inlet coupled to provide pressurized gas to said container and including a first portion having a second cross-sectional area, a second portion having a third cross-sectional area, a third portion coupled to deliver a flow of gas, and means for flexibly coupling said third portion to said first and second portions, the sum of said first and second cross-sectional areas being equal to the third cross-sectional area; and

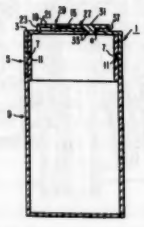
means for discharging material from said container.

4,494,679

THERMOPLASTIC CONTAINER CLOSURE FOR DISPENSING SOLIDS

Bruce T. Cleevely, Pittsburgh, Pa., assignor to The C. F. Sauer Company, Richmond, Va.

Filed Jul. 26, 1982, Ser. No. 402,159
Int. Cl.³ B65D *47/08*
U.S. Cl. 222—151 **3 Claims**



1. A product dispensing closure for containers for finely divided solids wherein the container has a neck of circular section terminating in an annular lip, the closure comprising an integral thermoplastic molded unit having:

(a) an annular planar base having a depending skirt around

its outer periphery which fits about and is secured to the neck of the container, with the lip sealed against and providing a support for the base when the closure is in use:

(b) a substantially vertical wall extending upward from an inner periphery of the base having an elevated planar platform over the part of the area encircled by said vertical wall;

(c) a second, higher platform over the remainder of the area enclosed within said vertical wall, there being an integral straight vertical step connecting the upper and lower platforms, said step being in the location of a chord of the circle defined by the base but elevated above the base, the lower elevated platform being larger than the higher platform but both having their upper surfaces parallel with the base and with each other;

(d) a flap joined to the upper edge of said step by an integral hinge forming connection, said flap being movable between an open position where it is clear of the lower elevated position to a closed position where it makes face-to-face contact with the lower elevated platform with which it is substantially coextensive, the flap having a thickness that, when it is closed, its upper surface is a planar extension of said higher elevated platform;

(e) said lower elevated platform having at least one product discharge opening therethrough located in said platform, in an area removed from the axis about which the flap hinges, the flap having at least one projection on its undersurface positioned to enter and close said at least one opening when the flap is tightly closed;

(f) said flap and higher elevated platform transmitting downward pressure thereon through said vertical wall to the inner periphery of the base;

(g) said flap, when closed, through the higher elevated platform providing a combined load supporting area and pressure transmitting surface entirely through said vertical wall extending from the inner periphery of the base into the base and from the base into the lip of the container.

4,494,680

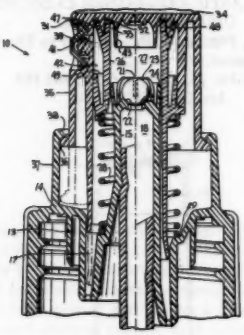
MANUALLY OPERATED DISPENSING PUMP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 121,223, Feb. 13, 1980, Pat. No. 4,402,432. This application Jun. 8, 1983, Ser. No. 502,274

Int. Cl.³ B05B *11/00*

U.S. Cl. 222—321 **15 Claims**



1. A dispensing pump comprising, a pump body adapted for fluid tight communication with the opening of a container of flowable product to be dispensed, said pump body including a stationary upstanding piston, a container vent opening, and a collar surrounding said piston, an annular plunger mounted for reciprocation on said piston to define therewith a variable volume pump chamber, said piston having a valve controlled inlet passage, a plunger head slidably disposed on said plunger for reciprocation and having means defining a variable volume accumulation chamber in open communication with said pump chamber, means resiliently urging said plunger into a fully raised position above said pump body, said head having a discharge passage adapted to be opened and closed by said plunger upon movement in response to a change in pressure within said pump chamber, retention beads on said plunger head and on said collar for limiting said plunger head in a predetermined raised position wherein said plunger closes said discharge passage in said fully raised position thereof, said retention beads extending laterally respectively toward confronting surfaces of said collar and said plunger head, one of said beads defining a first annular bearing member in sliding engagement with one of said confronting surfaces during plunger head reciprocation, said pump body further including a vertical annular wall spaced from said piston and therewith defining a vent chamber which includes said vent opening, a vent skirt extending from said plunger head and having an annular vent seal defining a second bearing member slidably guided along said wall during said plunger head reciprocation, said vent chamber being adapted to be closed by said vent seal in said fully raised position of said plunger and to be opened by said vent seal during plunger reciprocation, and said bearing members being spaced apart acting to resist any lateral or eccentric forces applied to said head during its reciprocation to thereby isolate said forces from said plunger permitting it to respond without restraint during said movement in opening and closing said discharge passage.

4,494,681

METHOD AND DISPENSER FOR DISPENSING BEER

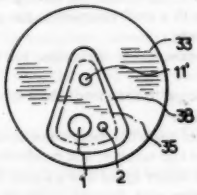
Toshihiro Ueda, Ibaraki; Masamichi Imanishi, and Takayoshi Miyano, both of Kyoto, all of Japan, assignors to Suntory Limited, Osaka, Japan

Division of Ser. No. 199,240, Oct. 21, 1980, Pat. No. 4,398,652. This application Apr. 18, 1983, Ser. No. 486,036

Claims priority, application Japan, Nov. 21, 1979, 54-151648; Feb. 22, 1980, 55-22913; May 12, 1980, 55-63173; Jul. 9, 1980, 55-94379; Jul. 14, 1980, 55-96741; Jul. 15, 1980, 55-100484; Aug. 6, 1980, 55-112100; Aug. 6, 1980, 55-112101

Int. Cl.³ B67D *3/00*

U.S. Cl. 222—485 **15 Claims**



1. A metal beer container having a pull-tab opening on the top end thereof, comprising: a subsidiary plate previously fixed to the inner side of said top end and which covers the under side of an opening made by the removal of said pull-tab, said subsidiary plate having a main pouring port subsidiary pouring port, and air intake port arranged thereon to face said opening made by removal of said pull-tab.

4,494,682

POURING FITMENT WITH CONTAINER AND CLOSURE THEREFOR

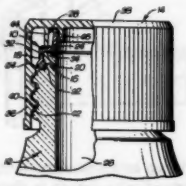
Ronald D. Beckstrom, Fullerton, and Chester C. Anderson, Santa Ana, both of Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Jul. 7, 1982, Ser. No. 396,025

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.³ B65D *25/48*

U.S. Cl. 222—551 13 Claims



1. A pouring fitment for a container comprising:

an annular retainer portion defining an inwardly facing annular recess to receive an outwardly extending annular holding portion of a mating container;

an upwardly facing annular channel defined by said retainer portion to receive a downwardly extending support member that forms part of said closure;

a ring extending upwardly from said retainer portion;

an annular lip extending outwardly from the top of said ring and defining a pour surface; and

an annular sealing bead extending downwardly from said retainer portion to engage said holding portion of said container, whereby a downward force applied to said lip and said ring by the installation of a closure on said container urges said bead toward a liquid-tight sealing relationship with said holding portion.

4,494,683

STEAM KILN

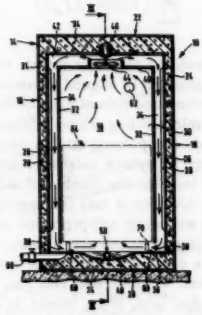
Kurt Kleber, Zum Mühlgraben 4, 6842 Bürstadt, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,172

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3143907

Int. Cl.³ D06C *7/02;* A41H *43/00*

U.S. Cl. 223—51 8 Claims



1. A steam kiln for setting of folds of fabrics previously provided with folds, by means of heated steam, comprising: a housing having an interior with a top wall, a bottom wall, a front wall, a back wall, and two side walls, a sealing charging door in said front wall, and heating elements in the housing interior for reheating steam brought into the kiln interior, said heating elements being disposed on said two side walls, first shielding walls disposed at a distance from the heating elements and from each of said side walls so as to form two air guiding chambers extending essentially vertically along said side walls and terminating slightly above said bottom wall; a second shielding wall disposed at a distance below said top wall, an entry aperture in said second shielding wall for the steam contained in the steam kiln and forming with said top wall a horizontal air guiding chamber communicating with said vertical air guiding chambers, a blower arranged in said horizontal air guiding chamber and having an intake connected to said entry aperture and a discharge communicating with said horizontal air guiding chamber, said bottom having a shallow, trough-like recess for the collection of steam condensate, and a steam feed system adapted to be connected to a steam source and provided in said recess and having orifices.

4,494,684

LUGGAGE BINDER FOR A BICYCLE OR LIKE VEHICLE

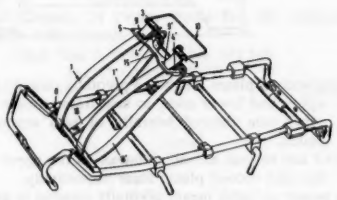
Christiaan J. H. Duyker, MA Lisse, and Albertus C. Balk, XL Aerdenhout, both of Netherlands, assignors to Bibla Rubber B.V., Netherlands

Filed Jul. 9, 1982, Ser. No. 396,834

Claims priority, application Netherlands, Jul. 14, 1981, 8103347

Int. Cl.³ B62J *7/08*

U.S. Cl. 224—39 10 Claims



1. In a longitudinally adjustable luggage binder for a vehicle luggage carrier having at least first and second bars, comprising an elastic band, one end of which passes through a first slot in an adjusting clasp and is secured thereto by means of an enlarged portion engaging the edges of the slot, the band, after a loop has been formed about a bar of the luggage carrier, being conducted through a second slot in the adjusting clasp so that the enlarged portion is pressed and retained by the band against the adjusting clasp, the other end of the band being attached to a hook member adapted to engage a part of the luggage carrier, characterized in that:

the band after the loop has been formed, is conducted through the second slot only in the adjusting clasp, which second slot, as seen from the loop, is disposed beyond the enlarged portion, and beyond the first slot by a fixed distance, such that between the loop and the hook member the band extends through only a single slot in the adjusting clasp,

whereby the distance between said adjusting clasp and said hook member can be adjusted by merely rotating and sliding said clasp relative to said band.

4,494,685

CROSS TIE END PLATING MACHINE

Gordon E. Matlock, 544 Sappington Bridge Rd., Sullivan, Mo. 63080

Filed Aug. 19, 1983, Ser. No. 524,582

Int. Cl.³ B25C *7/00;* B30B *7/04*

U.S. Cl. 227—41 10 Claims

1. An end plating machine for an elongated wood cross tie, comprising,

a frame means having upper and lower portions, and opposite ends,

first and second stationary platens adjacent one end of said frame means,

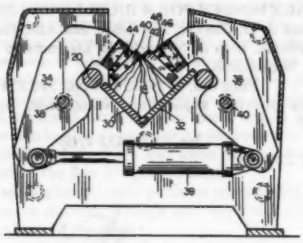
said first and second stationary platens being positioned adjacent and transversely to each other,

means on said frame means spaced longitudinally from said first and second stationary platens for supporting the other end of the tie,

said first and second stationary platens dwelling in planes which are approximately 45° from horizontal so as to horizontally support one end of the tie in a diagonal position with the surfaces of the tie being disposed approximately 45° from horizontal so that the tie has a pair of upper surfaces and a pair of lower surfaces,

first and second platen arms having upper and lower ends,

said first platen arm being pivotally mounted, between its upper and lower ends, to said frame means adjacent one side thereof laterally of said first stationary platen,



said second platen arm being pivotally mounted, between its upper and lower ends, to said frame means adjacent the other side thereof laterally of said second stationary platen,

first and second movable platens on the upper ends of said first and second platen arms respectively,

a power cylinder means pivotally secured to and extending between the lower ends of said first and second platen arms so that said first and second movable platens may be brought into contact with the upper surfaces of the tie and to squeeze the same to substantially close any cracks in the end of the tie,

a horizontally disposed power ram means at said one end of said frame means for forcing a nail plate into the end of the tie after the first and second movable platens have closed the cracks in the end of the tie,

and an abutment means on said frame means spaced from said one end thereof for limiting the longitudinal movement of the tie as said ram means forces the nail plate into the end of the tie.

4,494,686

WIRE SETTING TOOL

Lee H. L'Heureux, Box 8644, c/o ARAMCO, Dhahran, Saudi Arabia

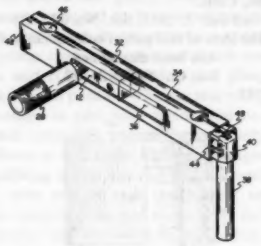
Filed May 19, 1983, Ser. No. 495,939
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—147 **11 Claims**

1. A tool for driving a wire length into a hard material which comprises in combination:

a. an elongated holder having a bore therein, said bore extending the entire length of the longest dimension of said holder and opening into at least one end of said holder, said holder having a first slot which is coextensive with the entire length of said longest dimension and which penetrates from the outside of said holder through to said bore to permit the insertion of said wire length into said bore of said holder;

b. a vise adapted to be slidably located inside said holder and having a first jaw member and a second opposing jaw member, said jaw members opening along said first slot in order to receive said inserted wire length.

c. means for operating said vise to permit said received wire length to be clamped and released; and



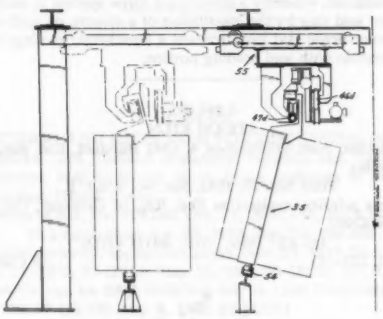
d. means for driving said vise forcefully along said bore while said received wire length is clamped by said vise thereby driving said wire length a chosen distance into said hard material after said clamped wire length and said vise are drawn back from said hard material.

4,494,687

EXPANDED CAR BODY WELDING ASSEMBLY SYSTEM

Cristiano Rossi, Birmingham, Mich., assignor to Comau S.p.A., Grugliasco, Italy

Filed Mar. 21, 1983, Ser. No. 477,125
Int. Cl.³ B23K *37/04;* **B23Q** *7/14*
U.S. Cl. 228—47 **22 Claims**

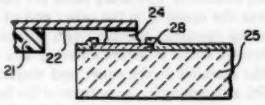


1. Car body welding assembly system including a framing station having a plurality of aligned reciprocable gates adapted respectively to orient component parts of different body styles with programmable welding means adapted to weld any of said different body components into an integrated body structure, characterized by system means for interchanging different end gates to increase the number of different body styles capable of being welding at said framing station, said system means including automatic self-propelled monotractor means for releasably engaging an end gate to move it from its aligned end position to a crane area, automatic crane means at said crane area adapted to move said end gate and monotractor means to a storage area, track means at said storage area adapted to receive and store said end gate as well as another substitute gate, automatic means for said monotractor to sequentially move said end gate into storage, release engagement, move to and engage said substitute gate, and move said substitute gate to said crane means for crane transfer to said framing line, and then move said substitute gate to said end gate position.

4,494,688
METHOD OF CONNECTING METAL LEADS WITH ELECTRODES OF SEMICONDUCTOR DEVICE AND METAL LEAD THEREFORE

Kenzo Hatada, Katano, and Isamu Kitahiro, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 11, 1982, Ser. No. 357,319
Claims priority, application Japan, Mar. 16, 1981, 56-37499
Int. Cl.³ B23K *19/00*
U.S. Cl. 228—180 A **9 Claims**

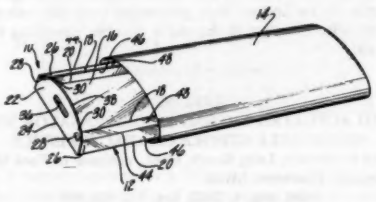


1. A method of connecting metal leads with electrodes of a semiconductor device, comprising the steps of:
forming metal bumps on a supporting member;
aligning metal leads supported on a carrier with said metal bumps and superimposing each of said metal leads on a corresponding one of said bumps;
applying pressure and heat to the surfaces of the respective leads on the opposite side from the surfaces which face said bumps so that the surfaces facing said bumps are pressed against said bumps, the pressure and heat being sufficient for bonding the leads and the bumps and insufficient to produce any substantial melting of the metal of the bumps;
separating said bumps from said support member;
aligning said metal leads with the leads of a semiconductor device so that the surface of each of said metal bumps on the side opposite the surface bonded to said metal lead faces a corresponding one of the electrodes of said semiconductor device; and
applying pressure and heat to said metal leads for pressing said metal bumps against said electrodes and bonding them thereto, the pressure and heat being insufficient to produce any substantial melting of the metal of said bumps.

4,494,689
CARRYOUT FOOD TRAY

Michael Ilitch, Bloomfield Hills, Mich., assignor to Little Caesar Enterprises, Inc., Farmington Hills, Mich.

Filed Jul. 14, 1983, Ser. No. 513,767
Int. Cl.³ B65D *5/20*
U.S. Cl. 229—30 **7 Claims**

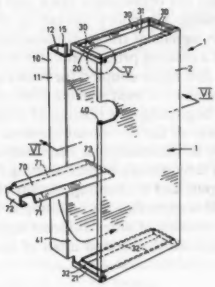


1. A carryout food tray comprising: a paperboard blank having a central panel of a rectangular shape; the blank including a pair of side panels having associated foldable scoreline connections to opposite sides of the central panel; the blank including a pair of end panels having associated foldable scoreline connections to opposite ends of the central panel; said side and end panels each having opposite ends positioned in adjacent pairs with the panel ends of each pair spaced from each other at the adjacent corner of the central panel; each side panel end including a tab; each panel end including a slot for receiving the tab on the adjacent side panel end such that the side and end panels can be folded upwardly and secured to each other at the corners of the central panel in order to prevent contact between carryout food on the tray and a bag that receives the tray and in order to also permit the food to be served on the tray after removal of the bag without the possibility of the food slipping off the tray when it is inclined; the ends of each side and end panel including edges that are inclined with respect to the associated scoreline connections thereof to the central panel; the inclination of the ends of the side and end panels being in a direction away from the adjacent panel ends such that the upwardly folded side and end panels are inclined inwardly over the central panel with the tabs and slots secured to each other; each side panel including a foldable scoreline extending parallel to the adjacent side of the central panel to define inner and outer side panel portions; the tabs being positioned on the outer portions of the side panels at the ends thereof; and the slots being inclined with respect to the scoreline connections of the end panels to the central panel to provide the outer side panel portions with a greater inward inclination than the inner side panel portions.

4,494,690
CONTAINER

Emmanuel F. Dupuis, 21 Prince Philip Dr., St. Catharines, Ontario L2N 3H9, Canada

Filed May 3, 1983, Ser. No. 491,110
Int. Cl.³ A47G *29/12*
U.S. Cl. 232—22 **13 Claims**



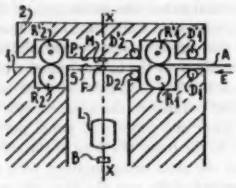
6. A container for articles, the container comprising: a main body for receiving articles; resilient clip means extending from the main body for securing the container to an edge of a door; two first openings each of which includes a respective first means associated only with the peripheries of the openings for at least hindering removal of articles from the container, the first openings being provided at opposite ends of the main body; a second opening in the main body for removal of articles therefrom; the container, in use, being adapted to be mounted by said clip means on an edge of a door having an associated doorjamb, with one first opening facing downwards, and with the first means associated with said other first opening preventing articles within the container from falling out of the container, whereby articles can be inserted into the container through said one first opening, and when the door is closed the second opening is closed to prevent removal of articles therethrough, but when the door is opened the second opening is also opened to permit removal of articles from the container through the second opening.

4,494,691

LINE-BY-LINE DOCUMENT SCANNER EQUIPPED WITH A DEVICE FOR CONTROLLING THE POSITION OF DOCUMENTS

Guy Boutrois, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 17, 1982, Ser. No. 442,507
Claims priority, application France, Nov. 17, 1981, 81 21483
Int. Cl.³ G06K 7/10
U.S. Cl. 235—470 **3 Claims**



1. A scanner for line-by-line scanning of a document, comprising:

a surface for transfer of the document in continuous motion,

means for causing the document to slide along the surface,

n photosensors (where n is a whole number greater than 1) each having a reading field and adapted to deliver scanning signals,

a registration mark drawn on a fixed support and located within the reading field of m out of the n photosensors (where m is a whole number with $O<m<n+1$), said registration mark and said n photosensors being respectively located on the two sides of said surface,

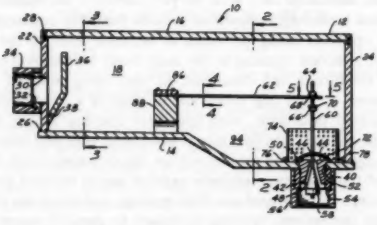
comparison circuit for detecting the passage of the document between the registration mark and the m photosensors, comprising: a memory having an input coupled for receiving the signals of the m photosensors at least at the beginning of a reading process and one output; a comparator having a first input coupled for receiving the signals of the m photosensors at least starting from an instant located between the beginning of a reading process and the beginning of transfer of the document between the registration mark and the m photosensors, a second input coupled to the output of the memory at least alarting from said instant and one output; and a counting circuit connected to the output of said comparator for counting at the time of each line scan the number of times different signals are received on the first and on the second input of said comparator.

4,494,692

STEAM TRAP

John J. Dobias, 1212 Sumach Dr., Windsor, Canada N8S 2S4

Filed Sep. 18, 1981, Ser. No. 303,396
Int. Cl.³ F16T 1/04
U.S. Cl. 236—59 **6 Claims**



1. A steam trap comprising a generally rectangular hollow body including two parallel spaced apart sides, two parallel spaced apart ends, a bottom having a lower portion at one end thereof forming a sump for collection of fluids in the one end of the steam trap together with one end of the hollow body and the ends of the side walls at the one end of the hollow body, and a removable cover, an opening in the other end of the hollow body through which steam and fluids enter the steam trap, an exteriorly threaded coupling member secured to the hollow body around the opening in the other end of the hollow body for connecting a steam pipe thereto, a baffel extending completely across the other end of the hollow body within the hollow body and extending upwardly from the bottom of the hollow body over the opening in the other end of the hollow body and including openings therethrough adjacent the bottom thereof whereby steam moisture entering into the hollow body through the opening in the other end thereof are separated at the baffel, an opening in the bottom of the hollow body within the sump adjacent the one end of the hollow body through which fluid is passed out of the steam trap, a cylindrical valve seat member including an external thread on one end thereof and an annular outwardly extending flange on the other end thereof having a conical valve seat extending axially therethrough, an internally and externally threaded cylindrical member threadedly engaged with the threaded one end of the valve seat member and clamping the periphery of the opening in the bottom of the hollow body between the flange on the valve seat member and one end of the cylindrical member to secure the valve seat member in the opening in the bottom, a conical valve complimentary to the conical valve seat and including a stem thereon extending upwardly through the valve seat into the hollow body positioned within the valve seat, a pair of spaced apart nut and washer combinations threaded onto the valve member stem, bi-metal means including a plurality of alternate layers of brass and steel members with each brass member being connected to one adjacent steel member positioned within the hollow body, a separate extra steel member positioned on the bi-metal means whereby both top and bottom of the bi-metal means is a steel member for providing initial bias for the bi-metal means, a slot in one end of the bi-metal means receiving the stem of the valve member therethrough between the nut and washer combinations thereon, the other end of the bi-metal means being arcuate and extending in a full 180° arc to provide a portion extending substantially parallel to the remainder of the bi-metal means, support structure for the bi-metal means extending completely across the hollow body at the bottom thereof and having an arcuate recess completely through the bottom thereof to permit flow of liquid along the bottom of the hollow body to the sump from the baffel and means for securing the parallel portion of the bi-metal means to the top of the support structure, a cylindrical strainer positioned over the opening through the bottom of the hollow body and extending axially along the stem of the valve member and a dish-shaped strainer concave inwardly of the hollow body positioned over the valve seat member with the stem of the valve member extending therethrough.

4,494,693

FLUID ACTUATED THERMAL COMPENSATOR WITH ADJUSTABLE STROKE CHARACTERISTICS

Wilfred H. Bachle, Long Beach, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1982, Ser. No. 404,956
Int. Cl.³ F03C 5/00; F16J 3/06; G05D 23/12
U.S. Cl. 236—100 **4 Claims**

1. A thermal responsive actuator comprising:

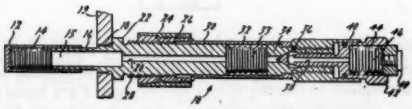
means defining a relatively fixed elongated housing member having an adjustable actuation volume at one end and a central passage extending therefrom to an opposite end;

means defining a actuation element mounted on one end of said housing means in direct communication with said actuation volume for linear movement with respect to said housing;

means defining a hollow support tube threadedly positioned onto said housing means, defining an adjustable volume trim reservoir with a volume directly related to the threaded position of said support tube on said housing means and said trim reservoir being in direct communication with the opposite end of said central passage

said actuation volume, said central passage and said trim reservoir together defining a fluid tight chamber;

a liquid phase fluid occupying said chamber wherein said fluid in said chamber changes volumetrically in response to changes in temperature;



a controllable valve means on said support tube in communication with said trim reservoir for sealing said chamber when closed or for allowing the supply of liquid to or the bleeding of liquid from said chamber when open;

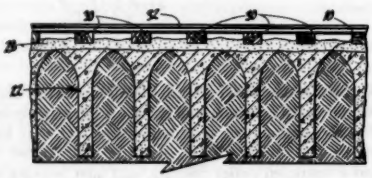
means defining a liquid supply reservoir threaded onto said support tube in direct communication with said valve means and including a moveable element in communication with said liquid supply reservoir for forceably supplying liquid to or bleeding liquid from said chamber through said valve means.

4,494,694

SUPPORT SYSTEM FOR A RAILROAD TRACK

John M. Pitt, Nevada; Richard L. Handy, and Robert O. Lamb, both of Ames, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 28, 1982, Ser. No. 425,181
Int. Cl.³ E01B 1/00
U.S. Cl. 238—2 **7 Claims**



1. A support system for a railroad track including a pair of rails secured to a plurality of spaced-apart cross ties, comprising,

a plurality of vertically disposed piles positioned directly below said ties and rails whereby loads imposed on the cross ties will be distributed into the subgrade by said piles,

said piles being comprised of a cementitious material,

a ballast material being positioned between the cross ties and the upper ends of said piles, and

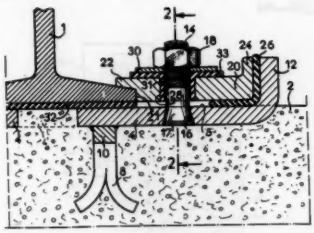
each of said piles having a cylindrical stem portion having a funnel-shaped head portion at the upper end thereof.

4,494,695

DEVICE FOR AFFIXING A RAIL TO A CONCRETE SUPPORT

Roger P. Sonneville, Annapolis, Md., assignor to Sonneville International Corporation, Washington, D.C.

Filed Sep. 16, 1981, Ser. No. 302,518
Claims priority, application France, Sep. 29, 1980, 80 20806
Int. Cl.³ E01B 9/46
U.S. Cl. 238—265 **10 Claims**



1. A structure comprising in combination:

(a) a railway rail including a foot having a lateral edge;

(b) a concrete railway tie disposed under said rail and having an upper surface of a given width longitudinally of the rail and below said rail foot; and

(c) a mounting device comprising:

(1) a steel plate interposed between said rail and said tie, said plate having a substantially upright first portion in spaced relation to said lateral edge of said foot of said rail, a substantially horizontal second portion extending from said upright portion to a location beyond the edge of said foot of said rail and under said rail, said plate having a widtn which is at the most one half of said given width of said upper surface of said tie, said plate being embedded and anchored into the concrete of said tie in a manner resulting from the moulding of the concrete onto said plate, with said plate having an upper surface flush with said upper surface of said tie, so that both said plate and said upper surface of said tie support said rail foot, said plate having a cross section of variable dimensions with the width of said plate increasing in the direction toward said first portion;

(2) anchoring means for anchoring said plate to said tie, said anchoring means being rigid with said plate and embedded in said concrete of said tie in an intimate matter resulting from the moulding of the concrete around said anchoring means;

(3) a soft elastic pad interposed between said rail foot and said upper surface of said plate and said upper surface of said tie vertically below said rail foot for equalizing the pressure of said rail foot on the steel of said plate and the concrete of said tie;

(4) an intermediate clip for maintaining the position of said rail, said clip being interposed between said upright portion of said steel plate and said lateral edge of said rail foot, said clip being in abutting relation to said lateral edge and in overlapping relation to said foot adjacent said lateral edge and in laterally supported relation to said upright portion of said plate; and

(5) tightening means for tightening said clip to said rail and to said plate without imparting forces to said plate tending to pull said plate and said anchoring means from said concrete tie, said tightening means including a bolt rigidly fixed to said plate and extending upwardly therefrom through said clip, and a nut threaded onto said bolt above said clip, said bolt having an integral shoulder member abutting a lower surface of said plate;

the position of the application of the laterally outermost force in a downward direction from said clip to said plate being

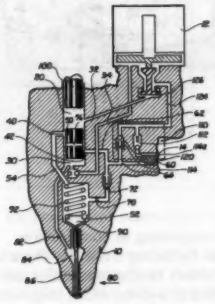
laterally outward of the position of connection between said bolt and said plate and laterally outwardly of the position of connection of said anchoring means to said plate.

4,494,696

UNIT INJECTOR

Michael J. Schneider, Huntington Woods, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 24, 1983, Ser. No. 507,329
Int. Cl.³ F02M 47/02
U.S. Cl. 239—90 **5 Claims**



1. A unit injector of the type having a timing chamber defined between a pumping piston and a metering piston, a metering chamber defined below the metering piston, a plurality of passages including a valve passage therein for communicating fuel thereto and a drain line;

a single electrically controlled valve connected to the valve passage responsive to control signals for controlling the flow of fuel at least between a fuel supply and the timing chamber;

a nozzle situated remote from the metering chamber and passages to communicate fuel to be injected therefrom the metering chamber to the nozzle and dumping means to periodically relieve the pressure within both the timing and metering chambers, the improvement comprising self-actuating check valve means to permit fuel to flow from the supply to the valve passage and control valve in one condition and for permitting fuel within the timing chamber during a pre-injection mode of operation characterized when the pumping piston is descending, wherein fuel is being forced from the timing chamber to flow through to drain for isolating the supply from the pressure line perturbations generated by the venting of fuel from the timing chamber and to permit in another condition fuel to flow from the supply to the timing chamber.

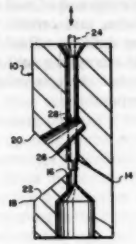
4,494,697

SPRAY CONTROL VALVE

John D. Geberth, Jr., 10 Goose Cove La., Ramsey, N.J. 07446

Filed Jan. 11, 1983, Ser. No. 457,195
Int. Cl.³ B05B 1/32
U.S. Cl. 239—124 **4 Claims**

1. In a spray control valve of the type used with a spray gun adapted for hydraulically atomizing and spraying liquids wherein the spray control valve functions as the spray tip, the spray control valve is mounted in a housing attached to the spray gun handle and includes a fluid bore communicating with the pressurized liquid supplied to the spray gun, a valve bore intersecting said fluid bore and substantially transverse thereto, and a spray opening substantially aligned with said fluid bore and intersected by said valve bore, the spray gun further includes a valve pin moveable in said valve bore and normally biased to obstruct said spray opening, and trigger means for moving said valve pin against said biasing action to unobstruct said spray opening and define the extent thereof, the improvement in said spray control valve comprising a relief bore formed in said spray control valve intersecting said valve bore proximate to said spray opening, said relief bore



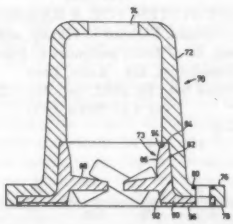
having a diameter greater than said valve bore so that a circumferential segment of said valve bore is exposed to the atmosphere to thereby relieve the pressure of any liquid material which infiltrates into said valve bore between the wall thereof and said valve pin.

4,494,698

POLYURETHANE SPRAY NOZZLE FOR ABRASIVE SLURRIES

Richard A. Brown, Hixson, and John D. Trew, Nashville, both of Tenn., assignors to Porter-Walker, Inc., Columbia and Urethane Specialties, Inc., Davidson County, both of, Tenn., a part interest

Filed Jun. 24, 1983, Ser. No. 508,072
Int. Cl.³ B05B 1/34
U.S. Cl. 239—489 **16 Claims**



1. A polyurethane spray nozzle for high pressure abrasive aqueous slurries of limestone and the like, said nozzle comprising a hollow integral body of polyurethane, said body having a restricted inlet opening, an expanded interior hollow reservoir and a restricted outlet opening, said inlet opening being defined by a plurality of polyurethane radial vanes to impart a swirling motion to a high pressure slurry introduced from a slurry pipe source, said polyurethane being characterized by a durometer reading of about 90, a high degree of abrasion resistance and slick surface to inhibit solids build up and wear on surfaces of the nozzle contacted by said slurry and resistance to corrosion by limestone and said vanes having a flex characteristic to inhibit clogging by discrete particles of limestone or the like comprising said slurry and an outwardly extending flange having at least a laterally extending portion of the flange integrally connected to said body adjacent said inlet opening and said flange being adapted to be rigidly connected to a mating flange in said pipe line source.

4,494,699

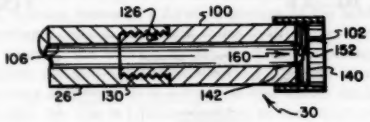
ADJUSTABLE SPRAY NOZZLE

Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060

Continuation-in-part of Ser. No. 313,456, Oct. 21, 1981,. This application Mar. 28, 1983, Ser. No. 479,204

Int. Cl.[3] B05B *1/26*

U.S. Cl. 239—499 3 Claims



1. An adjustable spray nozzle for providing a relatively narrow, elongate, and substantially uniform resulting spray pattern for materials issuing therefrom, with the length of the resulting spray pattern being controllable, the nozzle comprising:

(a) an elongate cylindrical tubular housing having a transversely extending end wall near one end thereof with the end wall having an exterior face and an interior face, and means defining a discharge opening therefrom formed through the end wall from the interior face thereof to the exterior face thereof, and the housing having structure which defines an elongate delivery passage for ducting material to be sprayed along a path extending longitudinally through the housing to the interior face for discharge through the discharge opening;

(b) the means defining the discharge opening including an elongate, substantially linear groove formed in the exterior face of the end wall, the groove being continuous along its length and extending from one edge of the exterior face to an opposite edge thereof and having opposed ends which open through the one and opposite edges, and a converging passage formed in the interior face of the end wall, with the groove and the converging passage intersecting and cooperating to define the discharge opening for discharging sprayed materials in a relatively narrow, elongate, but non-uniform type of discharge spray pattern which extends in planes that align with the linear groove, with the discharging materials tending to be concentrated toward opposed end regions of the discharge spray pattern, and with relatively lesser amounts of the discharging materials being present in central portions of the discharge spray pattern;

(c) band-like cylindrical spray deflector means carried by the housing for closely surrounding and closing the opposed ends of the linear groove where the opposed ends of the groove open through the one and opposite edges of the exterior face, and for extending beyond the end wall at locations near the opposed ends of the linear groove to intercept additionally end portions of the discharge spray pattern and to deflect intercepted discharging materials back into central portions of the discharge spray pattern such that a resulting spray pattern of material issuing from the nozzle is caused to be substantially uniform along its length from one end portion thereof through central portions thereof to the other end portion thereof; and,

(d) connection means adjustably mounting the spray deflector means on the housing for axial movement between positions wherein the spray deflector means intercepts end portions of the discharge spray pattern to differing degrees, whereby the length of the resulting spray pattern may be controlled by controlling the extent to which the spray deflector means intercepts end portions of the discharge spray pattern.

4,494,700

FUEL INJECTION NOZZLE FOR AIR-COMPRESSING, SELF-IGNITING RECIPROCATING INTERNAL COMBUSTION ENGINES

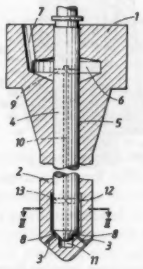
Anton Dolenc, Vienna, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Nov. 17, 1983, Ser. No. 552,809

Claims priority, application Austria, Dec. 14, 1982, 4536/82

Int. Cl.[3] F02M *61/04*

U.S. Cl. 239—533.3 4 Claims



1. In a fuel injection nozzle for air-compressing, self-igniting, reciprocating internal combustion engines, comprising

a nozzle body comprising a hollow nozzle tip having an inside peripheral surface and valve seating means facing the interior of said nozzle tip and a plurality of nozzle orifices, which have inlet openings in said valve seating means and are open on the outside of said nozzle tip, and

a valve needle, which is axially slidably mounted in said nozzle body and nozzle tip and comprises an end portion, which faces said valve seating means and is adapted to cooperate with it so as to open and close said inlet openings,

said nozzle tip comprising guiding means formed on said inside peripheral surface and serving to axially guide said valve needle,

said valve needle being retractable from said valve seating means to an open position, in which said inside peripheral surface, said valve seating means and said end portion define a plenum chamber,

said inside peripheral surface and said valve needle

defining around said valve needle between said end portion and said guiding means a clearance space, which is open at said end portion,

said nozzle body defining with said valve needle an annular chamber on the side of said guiding means that is opposite to said valve seating means,

said nozzle body being formed with a fuel inlet communicating with said annular chamber,

said needle valve being formed with an axial bore, which is open on said end portion, and with a transverse bore, which communicates with said axial bore and with said annular chamber regardless of the position of said valve needle,

the improvement residing in that

said valve seating means comprise a plurality of annular elevations, which surround respective ones of said inlet openings and have surfaces which face and conform to adjacent surface portions of said valve needle and are adapted to cooperate with said adjacent surface portions to open and close said inlet openings, and

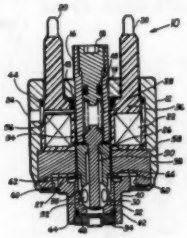
passage means are provided, through which said clearance space communicates with said annular chamber regardless of the position of said valve needle.

4,494,701

FUEL INJECTOR

Thomas E. Hensley, Newport News, and Richard D. Weaver, Williamsburg, both of Va., assignors to Allied Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 430,190
Int. Cl.³ B05B 01/30
U.S. Cl. 239—585 6 Claims



1. A fuel injector having a tubular housing member enclosed at one end containing a solenoid coil assembly, a tube member extending through an aperture in said enclosed end, and an adjustment means threaded in said tube member, an armature means adapted to be magnetically attracted to the tube member, valve seat means, valve member means responsive to the armature means for moving relative to the valve seat means, and means at the open end of the tubular housing member for receiving fuel into the injector for discharge between the valve member means and the valve seat means under control of the armature means, the injector characterized in that:

the valve means comprises a spherical valve member;

the armature means having a spherical bearing coupled thereto for locating and guiding in the tube member, said spherical valve member means being coupled to said armature means for movement therewith; and

the valve seat member being a tubular member having a plurality of guide means for guiding said spherical valve member to a conical valve seat at one end of the tubular member.

5. A fuel injector having a tubular housing member enclosed at one end with an aperture therein, an inlet tube extending through the aperture to a point intermediate the length of the housing member, armature means axially aligned with the inlet tube, a solenoid coil assembly, a pole piece member having an axially extending aperture and an elongated body member terminating in a valve seat, the fuel injector characterized in that:

the armature means includes an armature shaft terminating in a valve member for mating with the valve seat and an armature member extending into the pole piece member aperture for magnetically moving said armature means toward the inlet tube when the coil is energized;

a bias spring means for biasing the armature means away from the inlet tube when the coil is de-energized;

a bearing washer mounted in the body member for guiding said armature shaft during movement thereof; and

a plurality of axially-extending circumferentially spaced guides mounted in the body member concentric with the valve seat, said guides axially spaced from said bearing washer;

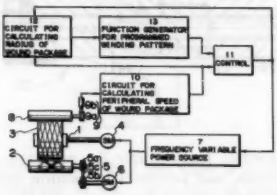
said bearing washer and said guides for concentrically guiding said armature shaft in response to energization of the solenoid coil to lift said valve member from said valve seat and in response to said bias spring when the solenoid coil is de-energized.

4,494,702

YARN WINDING APPARATUS

Yuzuru Miyake; Takami Sugioka; Shoichi Murakami, and Hideaki Ibuki, all of Matsuyama, Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Oct. 29, 1982, Ser. No. 437,523
Claims priority, application Japan, Nov. 4, 1981, 56-163756[U]
Int. Cl.³ B65H 54/02, 54/38, 59/38
U.S. Cl. 242—18 R 5 Claims



1. A rotating spindle drive type winding apparatus wherein a spindle, onto which a bobbin for winding a yarn to form a yarn package is inserted, is driven so that a predetermined winding factor is controlled in accordance with a predetermined program wherein said spindle drive type winding apparatus is provided with a control device which comprises:

(a) a peripheral speed detector for detecting the peripheral speed of said yarn package and generating a peripheral speed signal;

(b) a control, for controlling the rotational speed of said spindle, which receives a signal from a detector of the controlled winding factor and a preprogrammed winding signal, compares the winding factor signal and said preprogrammed signal and generates a control signal for controlling the rotational speed of said spindle;

(c) a circuit which receives said peripheral speed signal and said control signal and generates a radius signal;

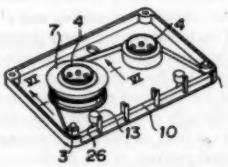
(d) a function generator which receives said radius signal and emits a preprogrammed winding signal to the control based on the radius signal.

4,494,703

ENDLESS TAPE CASSETTE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,645
Claims priority, application Japan, May 13, 1981, 56-72063
Int. Cl.³ G11B 23/06
U.S. Cl. 242—55.19 A 3 Claims



2. An endless tape cassette comprising a housing having upper and lower halves, a magnetic tape having a width one half of a width of a conventional magnetic tape within a tape cassette, the magnetic tape being coiled and having ends joined in the form of an endless magnetic tape, a tape reel having a height of a conventional tape reel mounted within the halves of the endless tape cassette and having disposed thereon coils of the magnetic tape, the tape reel having a hub portion and having upper and lower flanges, the lower flange having an upper surface sloping upwardly from an outer periphery of the lower flange toward the hub, and interior surface of the reel

sloping outwardly from an inner periphery of the lower flange to an inner surface of the upper flange, and the upper flange having a substantially flat inner surface, tape guiding means mounted in the housing for guiding the magnetic tape in the housing and for guiding tape from an inner coil on the reel to an opening forward in the cassette housing and then redirecting the tape to the outside of the reel for winding the tape on the coils on the reel, the tape guide means including restricting means for restricting the tape for running in the lower housing half, opening means in a forward portion of the housing for receiving a capstan and pinch roller to drive the tape within the housing, the housing having drive shaft opening means adjacent the hub and the hub having a central opening for receiving a drive shaft to rotate the reel within the housing, whereby the tape is withdrawn from an innermost coil adjacent the hub of the reel and is driven through a lower half of the housing and is wound on coils on the lower portion of the reel adjacent to the lower flange, and whereby the cassette housing may be inverted for moving the tape through the cassette in reverse direction by the capstan and pinch roller, the tape being drawn from an outer coil on the reel, turning the reel and winding tape from the capstan on the reel adjacent a flat inner surface of the upper flange, which is in a lower position during inversion of the cassette.

4,494,704

PROCESS AND DEVICE FOR MANUFACTURING MOTHER CAPACITORS BY HELICAL WINDING

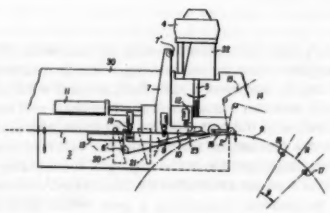
Claude Roy, Bagnolet, France, assignor to L.C.C.-C.I.C.E.-Compagnie Europeenne de Compsants Electroniques, Bagnolet, France

Filed Jan. 12, 1983, Ser. No. 457,476

Claims priority, application France, Jan. 12, 1982, 82 00374

Int. Cl.³ B65H *19/04, 35/02;* **H01G** *13/00*

U.S. Cl. 242—56.1 **22 Claims**



1. A process for manufacturing mother capacitors separated by an insert to form a block wherein the insert divides the block into at least two superposed mother capacitors which along with said insert have side edges completely covered with a contact metal, comprising helical winding of metalized films on a wheel as well as periodic interpositioning, after a given number of winding revolutions, of said insert having an input or leading edge and a rear edge, which process comprises an operation for making the position of an insert interpositioning device dependent on the position of the external layer of the winding, and an insert interpositioning operation comprising the steps of stopping said wheel, moving the interpositioning device from a rear, so-called rest, position to a forward position for presenting the insert by its leading edge, setting the wheel again in rotation so as to interposition said insert, moving the interpositioning device from its forward position to its rear position so as to continue winding of the films, and cutting said insert.

4,494,705

METHOD AND APPARATUS FOR TRANSPORTING AND STORING PAPER SHEETS AND THE LIKE

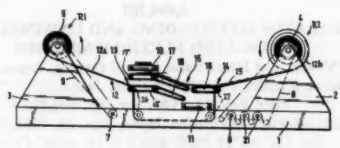
Heinz Linder, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Feb. 25, 1983, Ser. No. 469,925

Claims priority, application Switzerland, Mar. 30, 1982, 1934/82

Int. Cl.³ B65H *29/70*

U.S. Cl. 242—59 **18 Claims**



1. Apparatus for stacking and destacking sheets consisting of paper or the like, comprising sheet feeding means; sheet removing means; sheet stacking means including a hub, a flexible element having an end portion secured to said hub, means for rotating said hub in opposite directions so that the hub can collect and pay out said element, and guide means defining a first path along which a portion of said element advances in response to rotation of said hub; a reservoir; and sheet directing means including means for completing and opening a second path along which the sheets can advance from said feeding means into said reservoir, means for completing and opening a third path along which the sheets can advance from said reservoir into said first path so that said element can convolute the sheets around said hub in response to rotation of the hub in a direction to collect said element, and means for completing and opening a fourth path which connects said first path with said removing means so that the sheets which are convoluted around said hub can be advanced to said removing means in response to rotation of said hub in a direction to pay out said element, said sheet directing means defining a first junction connecting said reservoir with said second path and a second junction connecting said first path with said third path.

4,494,706

APPARATUS FOR CONVOLUTING STRIPS OF PHOTOSENSITIVE MATERIAL OR THE LIKE

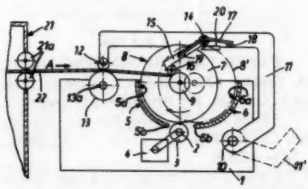
Walter Becherer, Munich; Erwin Geyken, Neubiberg, and Nikolaus Jelinek, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,131

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221221

Int. Cl.³ B65H *17/20, 17/44*

U.S. Cl. 242—65 **26 Claims**



1. Apparatus for convoluting a strip, particularly a strip of photosensitive material, comprising:

(a) a takeup reel for the strip;

(b) means for rotating said reel so as to convolute the strip around the same, said reel being movable between a first

position of engagement with and a second position of disengagement from said rotating means; and

(c) means for tensioning the strip during convolution of the strip around said reel, said tensioning means being operative to maintain said reel in said first position while a tensile force in excess of a predetermined value is exerted on the strip, and said reel being arranged to move from said first position to said second position in automatic response to a reduction of the tensile force on the strip below the predetermined value.

4,494,707

APPARATUS FOR WINDING AND UNWINDING AN ELONGATED FLEXIBLE MEMBER

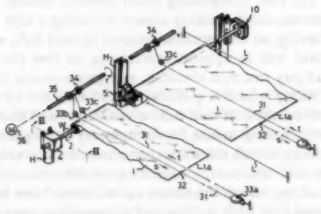
Kenji Niibori, and Hisao Suda, both of Oyama, Japan, assignors to Seiwa Kagaku Kabushiki Kaisha, Japan

Filed Feb. 16, 1983, Ser. No. 466,887

Claims priority, application Japan, Feb. 22, 1982, 57-23675

Int. Cl.³ A47H *1/00;* **A01G** *9/14;* **A63C** *19/12*

U.S. Cl. 242—67.2 **14 Claims**



1. Apparatus for winding and unwinding an elongated flexible member of the type wherein an end of said flexible member is affixed to a winding rod and said flexible member is wound on said winding rod or unwound from said winding rod, respectively, said apparatus comprising

a winding rod mounted for selective rotation in winding and unwinding directions about a fixed axis of rotation;

an elongated flexible member having one end affixed to said winding rod;

traction means operatively connected to said flexible member for selectively pulling said flexible member at a predetermined speed in said winding and unwinding directions;

first driving means selectively rotatable in normal and reverse directions and including a torque motor for driving said winding rod; and

clutch means operatively coupling said driving means to said winding rod, said clutch means being maintained in a disengaged state during the unwinding operation of said winding rod by making the speed of rotation of said driving means in the reverse direction higher than the speed of rotation of said winding rod in the unwinding direction thereby considerably reducing tension of said flexible member during said unwinding operation.

4,494,708

PAPER TAPE REWINDING DEVICE

James A. Stubbs, 631 Colfax Ct., Goleta, Calif. 93117, and Eugene L. Gumplo, 116 Princeton Pl., Lompock, Calif. 93436

Filed Apr. 18, 1984, Ser. No. 601,783

Int. Cl.³ B65H *17/02, 23/26, 17/18;* **B41J** *29/00*

U.S. Cl. 242—67.3 R **6 Claims**

1. For use with a machine having a tape holder for storing a roll of tape, and an automatic tape feed for pulling tape off said roll and feeding said tape such that a free end of said tape is accessible, a tape rewind device comprising:

a spool;

means for connecting said free end to said spool; and

means for mounting said spool on said machine such that said spool rests on said roll and is rotated by said roll, said mounting means including a mounting member for resting against a surface of said machine facing said roll, said mounting member being adjustable to permit an axis of

rotation of said spool to be disposed between an axis of rotation of said roll and said surface such that said spool and said mounting member are wedged between said surface and said roll.

4,494,709

SEAT BELT RETRACTOR WITH AN AUTOMATICALLY MEMORIZED TENSIONLESS POSITION

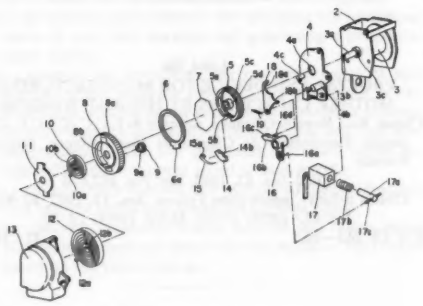
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,901

Claims priority, application Japan, Sep. 1, 1982, 57-150792

Int. Cl.³ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.6 **1 Claim**



1. A seat belt retractor with an automatically memorized tensionless position and having a frame rotatably carrying a belt reel by means of a reel shaft, a spiral winding spring connected between a cover and the reel shaft and biasing the reel in rotation in the belt-winding direction, characterized in that there is a mechanism for keeping the belt reel from rotating in the winding direction at the urging of the winding spring when the reel is at an automatically memorized rotational position, said mechanism comprising a gear wheel affixed to the reel shaft for rotation therewith and having internal teeth within a recess, a hook rotatably carried by the gear wheel adjacent the perimeter thereof and biased toward the reel shaft by a spring, a clutch ring frictionally coupled to the gear wheel by a clutch spring for rotation with the gear wheel and having an abutment, a gear carrier received by the gear wheel for rotation relative thereto about the axis of the reel shaft and having external teeth, an idler gear rotatably carried by the gear carrier and meshing with the internal gear teeth on the gear wheel and having a protrusion engageable with the hook when the idler gear is in a memorized position relative to the hook, which in turn depends upon the relative rotational positions of the gear wheel and gear carrier, the hook being engageable with an abutment on the gear carrier to stop rotation of the gear wheel, relative to the gear wheel, in the belt-winding direction upon engagement of the idler gear protrusion with the hook protrusion, a memory spring connected between the gear carrier and the reel shaft to urge the gear carrier in rotation in the belt-winding direction about the reel shaft axis, a

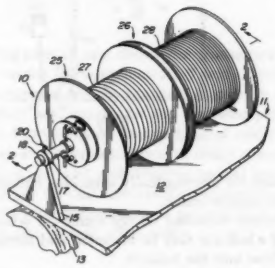
lever pivotably carried by the frame and having a toothed part engageable with the teeth on the gear carrier, actuating means for selectively urging the lever to pivot in a direction to engage the toothed part with the gear carrier teeth, and a friction plate pivotably mounted on a pin on the lever and selectively engaging the reel shaft and holding the lever toothed part out of engagement with the gear carrier teeth until a small rotation of the reel shaft in the belt-unwinding direction disengages the plate from the reel shaft.

4,494,710

REEL BRAKE APPARATUS

Michael J. Harris, P.O. Box 23127, Auston, Tex. 78735, and Kenneth N. Livingston, 10601 Sabo #182, Houston, Tex. 77089

Filed Nov. 2, 1983, Ser. No. 547,957
Int. Cl.³ B65H *59/04*
U.S. Cl. 242—155 **6 Claims**



1. A reel brake apparatus comprising an arbor, hub means on the arbor for rotatably supporting and axially locating a reel circumposed about said arbor, a friction plate circumposed about said arbor and removably engageable with one end of a reel for rotation with the reel, a fixed pressure plate circumposed about said arbor in facing spaced relation with said friction plate, a plurality of pressure pad assemblies carried by said pressure plate at angularly spaced locations thereabout, said pressure pad assemblies extending from said pressure plate toward and into frictional engagement with said friction plate, an elongate member extending generally normal to said pressure plate and adjustable longitudinally toward and away from said friction plate, a head on said elongate member facing toward said friction plate, a pad backing member between said head and friction plate, a shank on said pad backing member extending freely through said head, and spring means interposed between said head and backing member urging the latter toward said friction plate.

4,494,711

DUAL MODE CONTROL SYSTEM FOR CONTROLLING TAPE POSITION IN A REEL TO REEL TRANSPORT APPARATUS

Richard Van Pelt, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jan. 31, 1983, Ser. No. 462,492
Int. Cl.³ G11B *15/06, 23/12*
U.S. Cl. 242—184 **16 Claims**

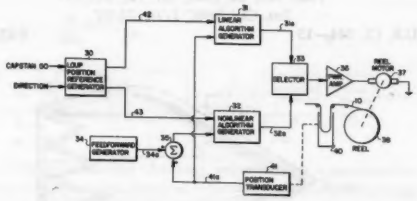
1. A system for controlling a reel motor in a reel-to-reel tape system in which tape is moved from a first reel to a second reel through at least one tape buffer, said system comprising:

a loop position reference generator that generates two loop reference signals, a first loop reference signal and a second loop reference signal, said first loop reference signal being coupled to a first of a plurality of current generators, and said second loop reference signal being coupled to a second of said plurality of current generators, said reference signals representing a desired position of said tape in said buffer;

position transducer means for measuring the position of said tape in said buffer and generating a position signal, said position signal representing the measured position of said tape in said buffer;

said plurality of current generators each producing an output control signal in response to one of said reference signals and said position signal;

selector means for selecting the output control signal from



one of said current generators in response to the measured position of said tape in said buffer relative to the desired position of said tape in said buffer, said selector means selecting the output control signal from said first current generator whenever there is a large error between the measured and desired tape position in said buffer, and selecting the output control signal from said second current generator whenever there is a small error between the measured and desired tape position; and

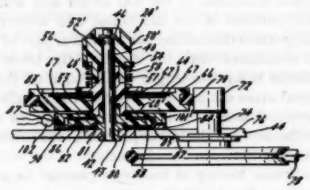
drive means for driving said reel motor in response to said selected output control signal.

4,494,712

TAPE DECK WITH NON-CONTACTING UNIDIRECTIONAL ROTATION SENSOR CONFIGURED TO PREVENT CAPSTAN TAPE WINDUP

Paul K. Godwin, Jr., Farmington, and Howard A. Kell, Jr., Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01368, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982
PCT Filed Sep. 30, 1982, Ser. No. 444,398
Int. Cl.³ G03B *1/02;* **G11B** *15/32, 15/43*
U.S. Cl. 242—191 **6 Claims**



1. A tape deck including:

means defining a mounting platform;

a supply reel spindle and a take-up reel spindle on said platform means positioned for accepting respective supply and take-up reels;

means connected to said platform means for driving said take-up reel spindle in a predetermined rotational direction;

multipolar magnetic field producing means mounted between said take-up reel spindle and said platform means for rotating with said take-up reel spindle only when said spindle rotates in said predetermined rotational direction;

one way clutch means between said platform means and said magnetic field producing means for allowing said field

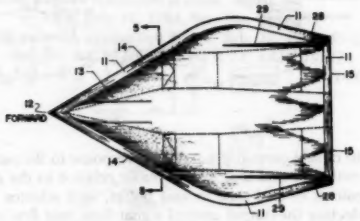
producing means to rotate only in said predetermined rotational direction and to prevent rotation of said field producing means in the opposite rotational direction; and means adjacent said magnetic field producing means for sensing the rotation thereof and providing an appropriate electrical signal output.

4,494,713

SHOCKCONE AND CHANNELED DISK-AIRFRAME

Kyusik Kim, 5026 Rhoads Ave., Santa Barbara, Calif. 93111

Filed Jun. 24, 1982, Ser. No. 391,577
Int. Cl.³ B64C *1/16, 23/04*
U.S. Cl. 244—15 **6 Claims**



1. A shockcone and channeled high speed flight disk-airframe

comprising an airframe having a top airfoil disk and a lower airfoil disk which are joined around the periphery thereof to form a shockcone at the forward portion of the airframe wherein the shockcone is defined by a forward nose and a wedge perimeter wherein the wedge perimeter extends rearward from the foreward nose and defines a leading edge around the foreward portion of the airframe and a trailing edge rearward of the foreward portion of the airframe, said airframe having a plurality of spaced, elongated, substantially parallel, open channels formed in the lower airfoil disk wherein the channels extend therein from the forward nose rearward of the airframe to define in the lower airfoil and between the plurality of channels at least one elongated, substantially rectangular shaped surface extending rearward from the foreward nose, said shockcone having a cross-section area rearward of the forward nose which is mushroom shaped defining a cap of a mushroom and a stem of a mushroom wherein the cap thereof is located in the top airfoil disk and defines the upper portion of the shockcone and wherein the lower stem portion thereof defines the lower part of the airframe and shockcone with the depth of the lower part of the airframe being the length of the stem of the mushroom shaped cross-section and wherein the length of the stem likewise defines both the inner sidewalls for the channels and the depth of the lower portion of the lower airfoil disk extending between the channels;

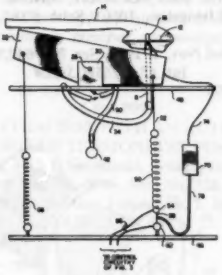
said airframe having at least one channel located on each side thereof and with the cross-sectional areas of the channels together totaling at least fifty percent of the total cross-sectional area of the airframe, each of said channels defining an inlet located in the forward portion thereof and an outlet located at the rearward portion thereof, each of said channels including means for shaping the channel such that the forward approximate one-third thereof is adapted to receive and support a variable volume power plant which produces a flattened thrust stream and such that the rearward approximate two-thirds thereof defines an outlet channel which is divergent from the portion thereof adjacent the forward one-third and becomes a divergent contoured shape downstream thereof to accommodate expansion of a high velocity thrust stream passing through the diverging contoured shaped portion of the channel to produce an aerodynamic, lift-thrust generating system for the airframe.

4,494,714

AUTOMATIC BALLOON LAUNCHING SYSTEM

Geoffrey E. Hill, 1789 Country Club Dr., Logan, Utah 84321, and Duard S. Woffinden, Logan, Utah, assignors to Geoffrey E. Hill, Logan, Utah

Filed Dec. 3, 1982, Ser. No. 446,656
Int. Cl.³ B64B *1/58*
U.S. Cl. 244—98 **17 Claims**



1. A system for automatically launching balloons comprising a balloon station frame,

nozzle means mounted on the frame on which the narrow end of a balloon may be mounted and through which gas may flow into the balloon,

conduit means for supplying gas to the nozzle means,

valve means responsive to first signals for controlling the flow of gas through the conduit means to prevent the flow of gas when closed and allow the flow of gas when opened,

release means responsive to second signals for separating the balloon from the nozzle means to thereby release the balloon to the atmosphere, and

control circuit means for producing the first and second signals, said control circuit means including

means for detecting a remotely generated signal and for producing a launch initiation signal in response thereto,

valve control means responsive to the launch initiation signal for applying an open signal to the valve means to cause the valve means to open and allow the flow of gas, and for applying a close signal to the valve means a period of time after application of the open signal to cause the valve means to close.

4,494,715

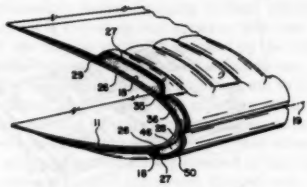
DEICER

Norbert A. Weisend, Jr., Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 9, 1983, Ser. No. 493,125
Int. Cl.³ B64D *15/18*
U.S. Cl. 244—134 A **8 Claims**

1. A pneumatic deicer pad for a rotating helicopter blade having a leading edge, an inboard end and an outboard end; said deicer pad overlying said helicopter blade so that the center line of said pad coincides with said leading edge of said blade; said pad having an intermediate portion overlying said leading edge and also having a pair of spaced apart portions located rearward of said centerline when positioned on said blade to provide a pair of rearwardly disposed edges; said spaced apart portions defining an upper portion and a lower portion as mounted on said blade; said deicer pad having an inner ply for attachment to said blade; an outer extensible elastic ply overlying said inner ply; said plies being stitched on said intermediate portion to define at least a pair of spanwise

passageways; said plies being stitched together at said upper and lower rearwardly disposed spaced apart portions to define a plurality of adjacent chordwise extending passageways in said respective upper and lower portions that all terminate adjacent said spanwise passageways; certain ones of said chordwise passageways communicate directly with said spanwise passageways; the remaining ones of said chordwise passageways communicate around said stitching with the adjacent ends of said spanwise passageways; said certain ones of said chordwise passageways also communicate with adjacent ones



of said remaining ones of said chordwise passageways around said stitching; means for communicating said chordwise and spanwise passageways with a pressure source to elastically distend and inflate said chordwise and spanwise passageways to break up ice formations on said pad; all of said plies being covered with an air impervious layer to retain pressurized air within said deicer pad; and said stitching on said inner ply and outer extensible ply on said rearwardly disposed spaced apart portions are of a serpentine design to provide said chordwise passageways in side by side relationship.

4,494,716

WING FLAP ASSEMBLY AND AIRCRAFT PROVIDED THEREWITH

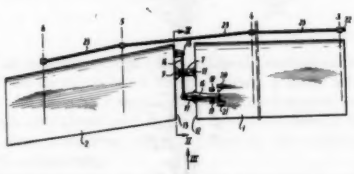
Cornelis A. Breedveld, Hoofddorp, and Frans W. de Haan, De Hoef, both of Netherlands, assignors to Fokker B.V., Schiphol, Netherlands

Filed Jan. 19, 1983, Ser. No. 459,101

Claims priority, application Netherlands, Jan. 20, 1982, 8200197

Int. Cl.³ B64C 9/00

U.S. Cl. 244—213 **4 Claims**



1. A wing flap assembly for an aircraft, comprising, at least two wing flaps positioned substantially in line with each other and mechanically connected to each other, each of said wing flaps having its own suspension and drive mechanism, one of said flaps being connected to a part for combined movement therewith, said part protruding between two abutments on the other flap, said abutments positioned on opposite sides of the protruding portion of said protruding part to limit the stroke of movement of said part, said one flap being pivotally connected to a lever pivotally mounted on the other flap at a distance from its pivotal connection to said one flap, said lever being integral with said protruding part which protrudes from the pivotal mounting to cooperate with said abutments.

4,494,717

VITAL TRANSMISSION CHECKING APPARATUS FOR COMMUNICATION CHANNELS

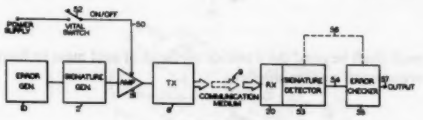
John D. Corrie, Chippenham, and Mark A. Tooley, Bristol, both of England, assignors to Westinghouse Brake & Signal Co., Ltd., Chippenham, England

Filed Sep. 30, 1981, Ser. No. 307,355

Claims priority, application United Kingdom, Oct. 7, 1980, 8032218; Mar. 21, 1981, 8108925

Int. Cl.³ B61L 21/00

U.S. Cl. 246—28 F **10 Claims**



1. Vital transmission checking apparatus for a communication system, in which function information is transmitted from a first location to a second location over a selected communication channel, comprising,

(a) a first generating means at said first location operable for generating, at a predetermined repetition frequency, a preselected multi-digit signature code representing a two-state function,

(b) error generating means coupled to said first generating means and operable for periodically corrupting the generated signature code in a preselected sequential error pattern at a second repetition frequency lower than said predetermined repetition frequency,

(c) transmitter means coupled to said channel and controlled by said first generating means for continuously transmitting the signature code output with periodic corruptions to designate a first state of said function,

(d) a control switch means coupled for inhibiting the transmission of said signature codes when said function is in a second state,

(e) receiver means coupled to said channel at said second location for receiving the signature codes transmitted by said transmitter means.

(f) signature detection means coupled to said receiver means and responsive to received codes for producing a first output only when correct signature codes representing said function are received and a second output when a corrupted code is received, and

(g) error detection means coupled to said signature detection means to receive both outputs and responsive thereto for producing a function output to register said first state of said function only when said first output is present and the sequential error pattern is correct,

(1) said second state of said function being registered when the error pattern is incorrect or in the absence of any received codes.

4,494,718

NAPKIN HOLDER

Sylvia J. Clay, 956 S. 6th St., Louisville, Ky. 40203

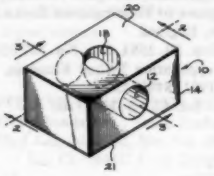
Filed Jun. 14, 1982, Ser. No. 387,862

Int. Cl.³ A45F 5/04

U.S. Cl. 248—1 **12 Claims**

1. In combination with a napkin, a napkin holder comprising a mass of material defining a first hollow shaft extending through and opening onto opposing, parallel, planar, vertically extending surfaces of said mass and a second hollow shaft perpendicularly intersecting said first shaft and extending vertically upward and opening onto an upper planar surface of

said mass, said napkin extending through said shafts with a portion of said napkin extending outside of each opening of



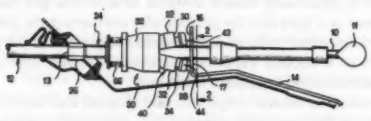
each shaft beyond the exterior surfaces of said mass to form an ornamental napkin display.

4,494,719

DEVICE FOR FIXING A FLEXIBLE CONDUIT TO A PANEL

Charles Guidicelli, Noyen, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Jan. 28, 1983, Ser. No. 461,828
Claims priority, application France, Feb. 15, 1982, 82 02421
Int. Cl.³ G12B *9/00*
U.S. Cl. 248—27.1 **10 Claims**



1. A device for fixing to a panel a flexible conduit in which a control cable slidably extends, including a fitting joinable to said conduit adjacent one end thereof and intended to be received in an opening formed in said panel, said fitting being provided with an abutment surface intended to bear against one face of said panel, said end of said conduit extending beyond the end of said fitting which emerges on the other face of said panel, said fitting comprising a pincer having jaws which, when tightened, are capable of engaging frictionally the outer surface of the said conduit to immobilize the latter axially relative to said fitting, and clamping means able to cause tightening of said jaws, wherein said pincer is formed in the prolongation of a cylindrical sleeve, said jaws being hingedly connected to said sleeve and forming, adjacent their free ends opposite to said sleeve, said abutment surface, said clamping means including a ring slidingly mounted on said cylindrical sleeve and having ramp means cooperating with said jaws for causing the latter to pivot towards said outer surface of said conduit and to cooperate in frictional engagement with the latter when said ring is moved axially relative to said sleeve in the corresponding direction.

4,494,720

TILT SWIVEL BASE

Jack Gregory, and Christian C. Landry, both of Acton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 14, 1981, Ser. No. 330,716
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—371 **23 Claims**

1. A terminal base of the type having a transverse centerline and comprising

A. a hollow box-like lower section having a front, a back and a pair of opposite sides;

B. swivel means mounted to the underside of said lower section permitting said section to swivel relative to a support surface on which they rest;

C. a hollow box-like upper section

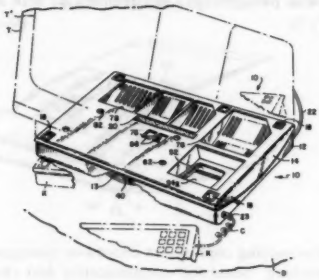
(1) having a front, a back and a pair of opposite sides;

(2) positioned on the lower section; and

(3) having terminal-supporting top surface means;

D. said upper and lower sections having opposing mating surface portion which are curved from front to back more or less about an imaginary axis which

(1) is substantially parallel to the transverse center line of said base; and



(2) lies appreciably above the confines of the base so that, when the upper section is moved on the lower section in either direction about said axis, the upper section is tilted relative to the lower section;

E. means for limiting the movement of the upper section on the lower section in said directions; and

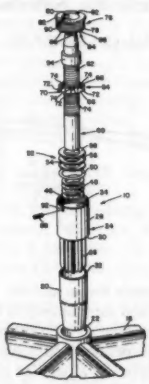
F. coacting means on said upper and lower sections defining selected positions of adjustment in the movement of the upper section relative to the lower section.

4,494,721

SEAT ADJUSTMENT MECHANISM FOR A CHAIR

Steven F. Trinkel, Rockport; Patrick E. Strange, and Mathew A. Slaats, both of Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Feb. 3, 1983, Ser. No. 463,528
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—406.2 **19 Claims**



12. An adjustable swivel chair, comprising:

a support member having a column means extending upwardly therefrom, said column means having therein a hollow portion and a downwardly facing engaging surface,

a seat having a vertically disposed spindle secured thereto, said spindle having a threaded surface thereon and being

rotatably and axially movably received in said hollow portion,

an adjusting nut threadedly engaging a portion of said spindle threaded surface that is axially below said downwardly facing engaging surface, said adjusting nut having an upper surface lockable with said downwardly facing engaging surface, and

resilient means axially between a lower surface of said adjusting nut and said column means for supporting said spindle in said column means,

said resilient means upwardly urging said adjusting nut to lockingly engage said adjusting nut upper surface with said downwardly facing engaging surface, whereby said adjusting nut is locked against rotation with said spindle, and said seat may be vertically adjusted by the rotation of said spindle relative to said locked adjusting nut,

said resilient means enabling said adjusting nut to be downwardly moved to disengage said adjusting nut upper surface from said downwardly facing engaging surface when weight is applied to said seat, whereby said adjusting nut rotates with said spindle during rotation of said weighted seat to prevent vertical adjustment thereof, and

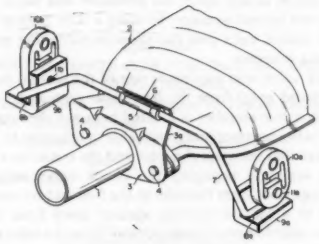
means made operative when the seat is weighted for causing said nut to tilt relative to the spindle thereby causing a degree of binding between the nut thread and spindle threads to thereby increase the frictional forces therebetween.

4,494,722

EXHAUST UNIT SUPPORT DEVICE

Shunichiro Kanai, Sagamihara, and Teruo Miyauchi, Hadano, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 26, 1982, Ser. No. 401,910
Claims priority, application Japan, Oct. 9, 1981, 56-161758
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—621 **16 Claims**



1. In an exhaust system of an internal combustion engine installed on an automotive vehicle having a body structure wherein the exhaust system includes exhaust-system component units, an exhaust unit support device for having the exhaust-system component units mounted on the vehicle body structure, comprising:

a first rigid coupling member rigidly secured to at least one of said exhaust-system component units,

a second rigid coupling member,

an elastic support member having its central portion rigidly secured to the first rigid coupling member and a portion rigidly secured to the second rigid coupling member, the first rigid coupling member rigidly and structurally intervening between the elastic support member and said one of the exhaust-system component units, and

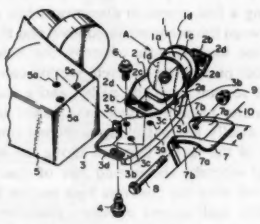
an elastic vibration-damping block having a portion connected to the second rigid coupling member by rigid fastening means and a portion connected to the vehicle body structure by rigid fastening means, wherein said second rigid coupling member has a weight predetermined to enable the second rigid coupling member to serve as a vibration-damping mass member.

4,494,723

DEVICE FOR MOUNTING AN ENGINE ON A VEHICLE BODY

Shinzo Kobuki; Hazime Kubota, and Tsuneo Miyamaru, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 454,009
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—635 **7 Claims**



1. A device for mounting an engine on a vehicle body, comprising:

a mount insultor having a shaft fixed onto the vehicle body, a substantially cylindrical outer member, and a substantially cylindrical hollow rubber ring inserted between said shaft and said cylindrical outer member;

a dish-shaped insulator bracket fixed onto said cylindrical outer member and substantially horizontally extending in a direction which is perpendicular to a longitudinal axis of the engine body, said insulator bracket having a substantially horizontally extending bottom wall portion and inclined wall portions which are formed at opposite ends of said bottom wall portion and have a threaded hole formed thereon;

a dish-shaped engine mount bracket fixed onto the engine body and substantially horizontally extending in a direction which is perpendicular to the longitudinal axis of the engine body, said engine mount bracket having a substantially horizontally extending bottom wall portion and inclined wall portions which are formed at opposite ends of the bottom wall portion of said engine mount bracket, the bottom wall portion and the inclined wall portions of said engine mount bracket having such a shape that they are appropriately fitted onto the bottom wall portion and the inclined wall portions of said insulator bracket, respectively, when said engine mount bracket and said insulator bracket are superimposed onto each other, each of the inclined wall portions of said engine mount bracket having a slot which extends in the longitudinal direction of said engine body and is aligned with said corresponding threaded hole when said engine mount bracket and said insulator bracket are superimposed onto each other; and

bolts inserted into said corresponding slots and screwed into said corresponding threaded holes for fixing said engine mount bracket onto said insulator bracket.

4,494,724

APPARATUS FOR THE PRODUCTION OF A MONOLITHIC MANHOLE BASE

Richard U. Rex, 22586 N. Nottingham Dr., Birmingham, Mich. 48010

Filed Sep. 20, 1982, Ser. No. 422,448
Int. Cl.³ B28B *7/10*
U.S. Cl. 249—148 **6 Claims**

1. A releasable molding apparatus for manufacturing manhosidewall

a pallet removably received with the jacket which forms a horizontally disposed bottom wall,

a one piece cylindrical core that is receivable within the open top of the jacket, said core having a vertically disposed side wall that is of a smaller diameter than that of the said jacket and a horizontally disposed bottom wall whereby the core is capable of coating with the jacket and the pallet to provide a pouring cavity therebetween into which concrete is poured to a predetermined level to produce a manhole base section having a floor and a raised sidewall,

hanger means for suspending the core within the jacket that includes a first pair of spacer pins that are axially aligned along a first common diametrical line of the jacket lying between the predetermined level and the center of gravity of the base section whereby the holes created by the spacer pins in the concrete section can be used to lift the base section from the pallet, and a second set of spacer pins also passing between the jacket and the core which are axially aligned along a second common diametrical line of the jacket that lies above the said predetermined level whereby the second pair of spacer pins can be removed after the concrete base section has been cast,

said first and second common diametrical lines being at about right angles in relation to each other to support the core in axial alignment with the vertical axis of the jacket.

4,494,725

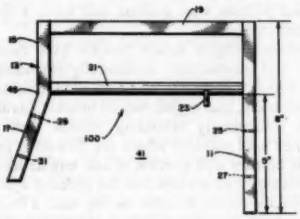
CONCRETE FORM HOLDERS

George J. Sims, 5933 20th St., Rio Linda, Calif. 95673

Filed Jan. 31, 1983, Ser. No. 462,210

Int. Cl.³ E04G *17/02*

U.S. Cl. 249—219 R **11 Claims**



1. A retainer clip used in the preparation of a form for pouring concrete and which comprises:

a pair of vertically spaced generally horizontal members, the lower of which is round in cross section, to minimize concrete pour contact secured on their ends to

each of a front and rear bar, the upper of said horizontal members being joined to one end of said front and rear bars,

the lower of said horizontal member being joined along the elevation of the front and rear bars at its termini,

at least the rear of said bars being disposed normal to said top member,

said bottom member also including at least one downwardly depending boss spaced from one of said bars along the underside of said bottom member a distance sufficient to hold a form board between the boss and said one of said bars,

each of said front and rear bars having inwardly directed through bores along their extension below said bottom members to provide for attachment of form boards to said bars.

4,494,726

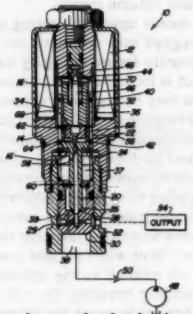
CONTROL VALVE

Viraraghavan S. Kumar, and Rohn L. Olson, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 8, 1983, Ser. No. 520,925

Int. Cl.³ F16K *31/02, 31/102*

U.S. Cl. 251—29 **8 Claims**



1. In a servo-operated control valve having a housing defining an inlet and an outlet, a poppet movable in the housing to control fluid communication between the inlet and the outlet, the poppet having a first passage extending therethrough and communicating with the outlet and a first valve seat surrounding an end of the first passage, the control valve also having a hollow main valve member movable in the housing and cooperating with the first valve seat to control fluid communication through the first passage, the valve member having a second passage extending therethrough, the control valve also having a hollow armature member movable in response to operation of the servo to move the valve member, and a pressure-balancing pin movably received by the armature for balancing hydraulic forces acting upon the armature and valve members, the first and second passages forming a flow path to the outlet for fluid which leaks past the pressure-balancing pin, the improvement wherein:

a check valve seat surrounds one of the second passage and is spaced apart from the first valve seat; and

a check valve member is located between the armature and the valve member and is movable in response to a pressure differential between the inlet and the outlet to a first position sealingly engaging the check valve seat to block leakage flow from the inlet to the first and second passages and to a second position spaced apart from the check valve seat to permit leakage flow from the inlet to the first and second passages.

4,494,727

ELECTRICALLY CONTROLLABLE VALVE

Rudolf Babitzka, Kirchberg; Walter Beck, Schwieberdingen, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,678

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039915

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—64 **9 Claims**

1. Electrically controllable valve having

a housing (1);

a bore (32) formed in the housing and having a bore axis;

a movable valve element (33) slidably retained in the housing for movement in the direction along said axis;

force generating means acting on the valve element; and comprising

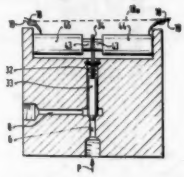
a first column or stack of first piezoelectric elements (16, 44) movable in a direction which is at least approximately

perpendicular to the axis of the bore within which the movable valve element is slidable, secured to said housing;

and a first clamping stem (43) operated by said first piezoelectric elements (16, 44);

a counter element (45) positioned at least approximately coaxially with respect to the clamping stem and forming a counter pressure or anvil for the clamping stem comprising a second column or stack of second piezoelectric elements (45);

a second clamping stem operated by said second piezoelectric elements projecting towards the first clamping stem; and



an extension element (34) secured to said movable valve element (33) extending outside of said bore and positioned for engagement between said stem and said counter element,

said stem being, selectively, engageable with the extension element (34) from the movable valve element to clamp the valve element in position within the bore, or permit movement of the valve element, respectively, under influence of the force generating means in accordance with the electrical condition of energization of said column or stack of piezoelectric elements.

4,494,728

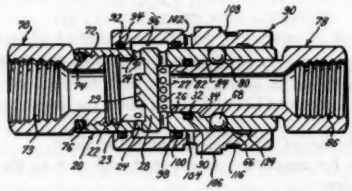
BELL-MOUTH PORTS FOR PNEUMATIC COUPLINGS USING O-RINGS

Lee H. Cruse, Ozark, Mo., assignor to Foster Manufacturing Company, Springfield, Mo.

Filed Jun. 7, 1982, Ser. No. 385,579

Int. Cl.³ F16L *37/28*

U.S. Cl. 251—149.9 **7 Claims**



1. In a body which has a surface against which an O-ring bears during relative reciprocation of that body and of that O-ring and which has a port that opens to that surface, the improvement which comprises a bell mouth for said port, said bell mouth having a continuous and unbroken convex surface which is completely free of all straight lines and which merges smoothly and without any breaks or apexes into said surface at two points which are spaced apart along said surface in the direction of relative reciprocation of said body and of said O-ring, said bell mouth having a convex face tangential to said surface of said body at said points.

4,494,729

VALVE OPERATING MECHANISM, IN PARTICULAR FOR AN AUTOMOBILE INTERNAL COMBUSTION ENGINE

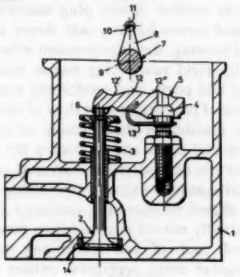
Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 458,162

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203791

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—229 **12 Claims**



1. A valve operating mechanism for a valve preferably in an automobile internal combustion engine, comprising:

an actuation spindle rotatable about an axis;

a component coupled to the valve, at least during valve opening, in a force-transmitting manner, said component having a bearing surface;

cam means on said actuation spindle including roller means pivotable about an axis, said roller means axis being eccentric relative to the axis of said spindle, said rolier means being arranged to engage said bearing surface for opening the valve, wherein said bearing surface forms a rolling surface for said roller means, said bearing surface being shaped to effect a desired valve-open cycle over a predetermined angle of spindle rotation and wherein a connection between said roller means and the valve is present only during said valve opening cycle; and

spring means for restoring the value to its closed position, whereby the roller means is moed to its valve-closed position independently of the force applied to the valve by the spring means.

4,494,730

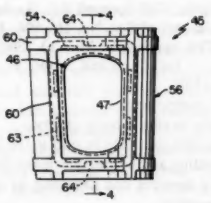
PLUG VALVE WITH IMPROVED PLASTIC SLEEVE

John A. George, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Nov. 1, 1982, Ser. No. 437,956

Int. Cl.³ F16K *5/02*

U.S. Cl. 251—309 **10 Claims**



1. In a plug valve for controlling fluid flow therethrough

said valve having, an outer housing, a flow passage extending through said housing and including an inlet and an outlet interconnected by a bore disposed therebetween, said bore having a central axis disposed substantially perpendicular to said flow passage, a plastic sleeve disposed within said housing and lining said bore, said sleeve having a pair of aligned ports therein at diametrically opposed locations, said ports being aligned with said inlet and outlet to enable fluid flow through said passage, a rotatable plug disposed within said sleeve, said plug having an opening therethrough which is adapted to be aligned in and out of registry with said inlet and outlet in accordance with rotation of said plug relative to said sleeve and housing, and means holding said sleeve against rotation relative to said housing, the improvement wherein said sleeve has substantially rigid reinforcing means embedded therein around each of said ports, said reinforcing means serving the multiple purpose of preventing cold flow of said sleeve adjoining said ports, minimizing fluid erosion of portions of said sleeve adjoining said ports, and increasing the rigidity of said sleeve around each of said ports such that with fluid flow through said valve at high velocity and with said plug rotated to a partially closed position any tendency for said plastic sleeve to be partially moved into said flow passage is substantially eliminated, each of said reinforcing means having a roughly rectangular outer peripheral outline and extending within said sleeve in all directions from around each port, said reinforcing means also having apertures therein with said apertures receiving portions of the plastic sleeve therethrough to firmly embed the reinforcing means in position in said sleeve, said housing having an inside surface and said sleeve having an outside surface, one of said surfaces having groove means therein and the other of said surfaces having projection means extending therefrom, said sleeve being adapted to be expanded and formed radially so that a portion of said projection means is disposed in said groove means, said groove means and said portion of said projection means cooperating to define said holding means and prevent rotation of said sleeve relative to said housing upon rotation of said plug, said groove means comprising a plurality of grooves and said portion of said projection means comprising a plurality of projections corresponding in number to and fitting within said plurality of grooves, said plurality of grooves extending radially in said housing from said inside surface and said projection means extending radially from the outside surface of said sleeve, said projection means comprising a pair of annular pressure rib structures in said sleeve which engage said inside surface of said housing in surrounding relation around the inner parts of said inlet and said outlet, and each of said reinforcing means comprising a reinforcement extending within said sleeve in all directions from around each port such that the reinforcement around each port substantially overlaps an associated annular pressure rib structure.

4,494,731

VALVE HAVING A MOVABLE INTERFACE ISOLATING AN ACTUATING MECHANISM

Richard W. Spils, 2225 Spenard Rd., Anchorage, Ak. 99503

Continuation-in-part of Ser. No. 165,694, Jul. 3, 1980, Pat. No. 4,363,464. This application May 13, 1982, Ser. No. 377,964

Int. Cl.³ F16K *31/50, 47/04*

U.S. Cl. 251—355 **6 Claims**

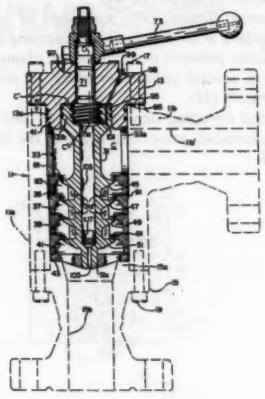
1. A valve comprising:

a valve body having a body cavity,

a valve member movable in said valve body cavity,

means providing at least one lubricant cavity associated with said valve member and changing in size upon movement of said member,

and means providing another lubricant cavity communicating with said one lubricant cavity and providing an interface between said body cavity and said other lubricant cavity movable concurrently with movement of said valve member to reduce the size of said other lubricant



cavity in proportion to the increase in size in the first mentioned lubricant cavity.

4,494,732

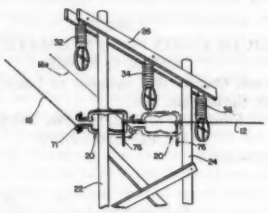
APPARATUS AND METHOD FOR STRINGING CENTER CABLES ON POWER TOWERS

Frank Waymire, Parker, Colo., assignor to Union Power Construction Company, Englewood, Colo.

Filed Nov. 5, 1982, Ser. No. 439,655

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—134.3 R **9 Claims**



1. A generally U-shaped hook device for stringing cables on sequentially spaced support towers, each having corresponding first and second laterally spaced poles, the device comprising:

a bight section, arm sections and end sections;

means for connecting a tensioned sock line to the bight section;

first line securement means located in a first end section for positioning a haul line laterally outwardly of a tower as the device is pulled to horizontally straddle the first pole;

first means located along a first arm section for bearing against the first pole while the device is straddled thereacross thereby hooking the device to the pole;

second line securement means located in a second end section receiving the haul line after its release from the first end section for enabling the device to be slipped off the first pole and passed between the poles for repeated retention to a second pole of a following tower; and

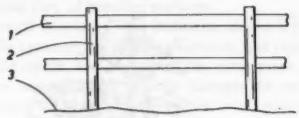
second bearing means located along a second arm section for bearing against a pole of a following tower.

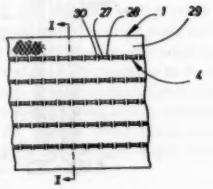
4,494,733

ENCLOSURE FOR ANIMALS

Jan Olsson, Prästliden 6, 511 00 Kinna, Sweden

PCT No. PCT/SE82/00201, § 371 Date Feb. 2, 1983, § 102(e) Date Feb. 2, 1983, PCT Pub. No. WO82/04378, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 9, 1982, Ser. No. 466,346
Claims priority, application Sweden, Jun. 9, 1981, 8103582
Int. Cl.³ A01K 3/00
U.S. Cl. 256—10 6 Claims





1. An enclosure for animals, comprising: at least one elongated tape extending between spaced apart points and having spaced longitudinally extending edges and planar sides; each tape comprising: a weave of a plurality of longitudinal and transverse, force-absorbing textile threads, and at least one electrical conductor for connection to a source of electricity and electrically insulated from the ground; each electrical conductor having at least one electrically-conductive contact wire woven into said weave and extending longitudinally of said tape, each contact wire having an uninsulated surface and also having a diameter larger than that of the longitudinal threads; whereby the outer surface of each contact wire is raised above the sides of the tape, each electrical contact wire having a core of textile material, of a certain diameter, and a metal wire wound around said core and having a diameter which is substantially less than the diameter of the core.

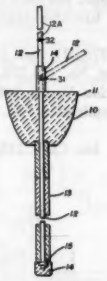
4,494,734

SLAG RETAINING DEVICE FOR USE DURING TAPPING OF CONVERTERS AND METHOD

Micheal D. LaBate, and Michael D. LeBate, II, both of 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Jul. 22, 1983, Ser. No. 515,998
Int. Cl.³ C21C 5/46
U.S. Cl. 266—45 10 Claims

9. The method of minimizing slag carry over upon draining molten metal from a furnace through a tap hole therein, said method comprising dropping a body of modified conical shape onto the surface of molten slag and metal in said furnace within a restricted area above said tap hole so as to insure that said body will be drawn into the tap hole, said body having a plurality of generally irregular faces, the intersections of which define a portion of the body having maximum cross section which is slightly larger than the maximum dimension of the cross section of the opening of said tap hole while leaving a portion of the body with a cross section less than the maximum dimension of the cross section of the tap hole, whereby the body can be lodged into the tap hole without completely blocking the tap hole opening, said body having a guide means depending from the underside of said body to engage said tap hole for guiding said body into said tap hole, said body having a density intermediate that of the molten metal and the slag, draining molten metal from the furnace through the tap hole opening, monitoring the condition of the stream emanating from said tap hole so as to obtain an indication of flaring of said



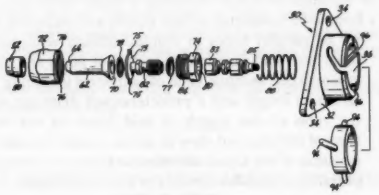
stream when said body lodges therein, and then shutting off flow through said tap hole so as to prevent carryover of slag onto the molten metal already tapped from the furnace.

4,494,735

APPARATUS FOR DEGASSING MOLTEN METAL

Robert E. Hershey, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 16, 1983, Ser. No. 552,340
Int. Cl.³ F27B 1/16
U.S. Cl. 266—218 14 Claims



1. An apparatus for use in the degassing of molten metal which comprises:

a chamber having an inner elongated sidewall portion, an outer elongated sidewall portion and a central axis;

metal inlet means positioned at a first height and tangentially located with respect to said chamber for tangentially introducing molten metal into said chamber such that said molten metal swirlingly flows from said molten metal inlet down through said chamber;

metal outlet means positioned at a second height below said first height for removing molten metal from said chamber; and

at least one fluxing gas inlet means mounted in said first inner elongated sidewall portion below said first height for introducing fluxing gas into said chamber, said at least one fluxing gas inlet means comprises a nozzle assembly sealingly mounted within an opening provided in said first inner elongated sidewall portion wherein said nozzle assembly comprises a nozzle nut, a nozzle blank received in said nozzle nut and a clamp plate, a seal having a first portion sealingly abutting said nozzle blank and a second portion sealingly abutting said clamp plate, means for holding said clamp plate in a non-rotational manner against said seal and a screw secured to said nozzle nut for biasing said clamp plate against said seal and said seal against said nozzle blank.

4,494,736

DEVICE FOR GENERATING A CONVECTIVE REACTION SYSTEM BETWEEN A REACTION AGENT AND A MOLTEN BATH

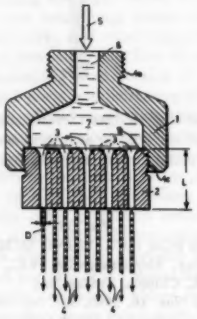
Friedrich W. Guttmann, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 276,837, Jun. 24, 1981, abandoned, which is a continuation of Ser. No. 144,274, Apr. 28, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,715

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924761

Int. Cl.³ C21B 7/16

U.S. Cl. 266—265 10 Claims



4. A device for blowing a liquid reaction medium onto a molten bath to create a reaction system, comprising:

an atomization nozzle including a liquid input port; and

a front shoe connected to said nozzle and including a plurality of parallel bores in communication with said liquid input port and functioning as output ports and extending adjacent one another, each of said bores including a predetermined length and a predetermined diameter such that the ratio of the length of said bores to the diameters thereof causing said shoe to act as a guide for and causing emission of the liquid reaction medium as a corresponding plurality of parallel streams of atomized liquid.

4,494,737

LANCE FOR REPAIRING THE LINING OF STEELMAKING VESSELS

Nicholas M. Rymarchyk, Jr., Wexford, and Leo L. Meinert, Baden, both of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Continuation of Ser. No. 309,644, Oct. 8, 1981, abandoned. This application Oct. 27, 1983, Ser. No. 546,631

Int. Cl.³ C21B 7/04

U.S. Cl. 266—281 25 Claims

1. In a steel-making apparatus combination comprising a vessel having an upper open mouth, an outer steel shell, an inner lining providing a hearth portion, and trunnion means on said vessel adapted to support the same for pivotal movement from a vertical operating position to a tilted discharge position, the improvement comprising,

a lining repair lance including,

a central slurry pipe,

a discharge nozzle connected to a lower end of said slurry pipe including an opening for discharging slurry material horizontally while said vessel is disposed in said vertical operating position,

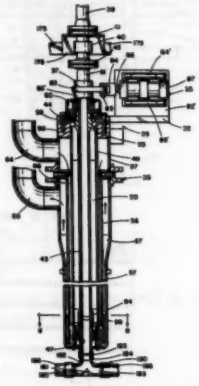
first inner, second intermediate, and third outer pipes concentric with said slurry pipe and relatively horizontally spaced to provide vertically extending inner and outer water passages,

said first inner pipe being spaced from said slurry pipe to provide an elongated swivel support chamber,

a top adapter assembly supporting said first, second and third pipes,

means supporting said slurry pipe relative to said first, second and third pipes for relative rotating movement,

conduit means connected to said slurry pipe including tubular swiveling means for directing pressurized slurry materials to said slurry pipe.



movable support means connected to said repair lance for moving the same relative to said mouth within said vessel for discharging slurry material against the inner lining of said vessel, and

means associated with said top adapter assembly for rotating said discharge nozzle into selective areas within said vessel.

4,494,738

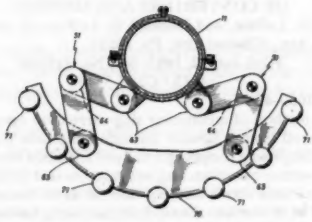
SHOCK-ABSORBING JOINT AND ASSEMBLY WITH ROTATING ARMS AND ELASTOMERIC SPRING ACTION

Frederick G. Britton, and Thomas A. Clark, both of Arlington, Tex., assignors to Oil States Industries, Inc., Arlington, Tex.

Filed Mar. 8, 1982, Ser. No. 356,219

Int. Cl.³ F16F 7/12

U.S. Cl. 267—140 12 Claims



1. A shock-absorbing joint comprising:

an inner pivot plate;

a pair of outer pivot plates generally parallel to and generally equidistant from the inner pivot plate on opposite sides thereof, the pair of outer pivot plates forming an unloaded angle with the inner pivot plate and being rotatable relative to the inner pivot plate by pivoting about a common pivot axis formed by the unloaded angle;

a first and second mounting base rigidly affixed to the inner pivot plate and to the pair of outer pivot plates, respec-

tively, the first and second mounting bases being rotatable relative to each other about the common pivot axis,

the first mounting base including

a pivot support shaft with the common pivot axis as its axis, the pivot support shaft being rigidly affixed to and passing through the inner pivot plate, and

an inner pair of generally symmetrical bonding surfaces, one rigidly affixed to each side of the inner pivot plate, the pivot support shaft passing through the inner pair of bonding surfaces,

the second mounting base including an outer pair of generally symmetrical bonding surfaces, one rigidly affixed to the inside face of each of the outer pivot plates, the pivot support shaft passing through the outer pair of bonding surfaces and the pair of outer pivot plates but not being attached to either; and

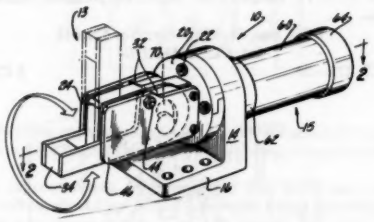
a body of elastomeric material bonded to the generally symmetrical bonding surfaces of the first and second mounting bases, so that a shock force received by either the inner pivot plate or the pair of outer pivot plates causes rotation of one relative to the other to form a loaded angle between the inner pivot plate and the pair of outer pivot plates smaller than the unloaded angle, which rotation causes the elastomeric material to be distorted by torque and to absorb rotational shear force resulting from the torque by elastomeric spring action returning the inner pivot plate and the pair of outer pivot plates to their relative position with the unloaded angle therebetween.

4,494,739

POWER OPERATED ROTATABLE CLAMPING ASSEMBLY

Al L. Valentine, Southfield, Mich., assignor to State Die & Engineering, Inc., Roseville, Mich.

Filed Mar. 4, 1983, Ser. No. 472,401
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **11 Claims**



1. Rotatable clamping apparatus comprising:

a fluid operated motor mounted on said support and including a fluid driven, reciprocable piston;

a clamping mechanism rotatably mounted on said support and including a clamping member rotatable to any of a plurality of clamping positions upon rotation of said clamping mechanism, said clamping mechanism further including cam means for shifting said clamping member between a released position and a clamping position and an annular shoulder;

means for drivingly connected said cam means with said cylinder assembly; and

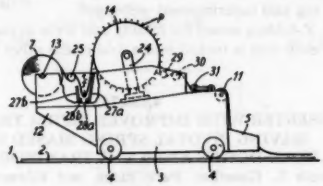
locking means for selectively locking said clamping mechanism in any of said plurality of clamping positions and including a flange engaging said shoulder and a locking member for drawing said shoulder against said support.

4,494,740

SPREADING EQUIPMENT HAVING SELVAGE ENGAGING INDEPENDENTLY ROTATED NEEDLE WHEELS

Nasu Noboru, Fukutama, and Inada Tatsuo, Kyoto, both of Japan, assignors to Kawakami Co., Ltd., Japan

Filed Jun. 20, 1983, Ser. No. 506,100
Claims priority, application Japan, Jun. 19, 1982, 57-106052
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **2 Claims**



1. A spreading equipment having a material roller at the rear part thereof and a feed-out roller at the forward position thereof and comprising:

(a) a pair of needle wheels symmetrically placed at the middle part of said equipment and independently rotatably mounted at locations corresponding to both selvages of material cloth mounted on said material roller,

(b) V-shaped guide plates installed between said needle wheels and said material roller and having photocell detecting means mutually faced each other at the bottom of said guide plates,

(c) an unbinding roller disposed between said guide plates and said material roller in order to take out material cloth, thereby causing material cloth to hang loosely in a V-shape between said guide plates and causing the hanging length to be fixed at all times by said photocell detecting means at the bottom, and

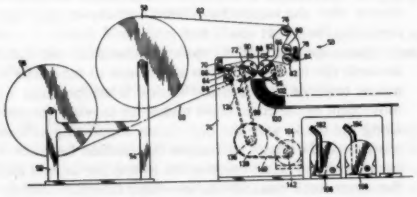
(d) means mutually operating together said unbinding roller and said photocells.

4,494,741

TISSUE CUTTING AND INTERFOLDING APPARATUS FOR Z WEBS

David L. Fischer, and William E. Waterstreet, both of Green Bay, Wis., assignors to John M. Rudolf, Green Bay, Wis.

Continuation-in-part of Ser. No. 246,053, Mar. 20, 1981, abandoned. This application Apr. 1, 1983, Ser. No. 481,118
Int. Cl.³ B41L *1/32*
U.S. Cl. 270—39 **15 Claims**



1. An improved machine for perforating, superimposing, and Z-folding first and second tissue webs to form an interfolded stack of separable tissues, said machine comprising:

A. first and second counterrotating perforating rolls mounted on a frame and forming a first nip;

B. perforating means associated with said perforating rolls for forming periodic longitudinally spaced transverse tear lines in the respective webs;

C. first transport means for transporting said first web into

said first nip on said first perforating roll, and for transporting said second web into said first nip on said second perforating roll, whereby to superimpose said webs at said first nip with the tear lines of said first web positioned longitudinally between the tear lines of said second web;

D. second transport means associated with said perforating rolls for alternately adhering said superimposed webs to one of said first and second perforating rolls approximately at said nip, transporting said adhered superimposed webs out of said nip by rotating said rolls, and then releasing said superimposed webs; and

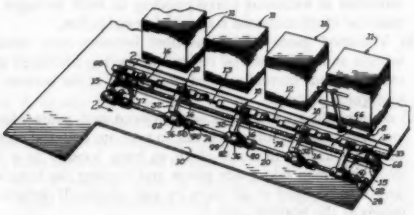
E. Z-folding means for folding said webs so each tear line of each web is tucked into a fold of the other web.

4,494,742

INSERTER WITH IMPROVED MEDIA TRANSPORT HAVING PIVOTAL SPRING BIASED SHEET HOLD-DOWNS ADJACENT TRANSPORT BELT

Kenneth L. Guenther, Park Ridge, and Edward H. Zemke, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,494
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—58 **19 Claims**



1. In an inserting device adapted to feed individual inserts from stacks thereof to a station wherein the inserts are inserted within envelopes, an improved insert transport means compromising:

an insert track on which the inserts are deposited after being withdrawn from the insert stack;

chain drive means with lugs mounted thereon on the insert track for moving the inserts along the insert track towards the envelope inserting station;

insert hold-down members which pivot out of the way of the inserts as the inserts are withdrawn and deposited onto the insert track and which pivot to a position above and on top of the inserts to apply a compressive force to the inserts after the inserts have been withdrawn and deposited onto the insert track; and

belt means on the insert track to transport the inserts towards the insertion station and means to move the belt means towards the insertion station in cooperation with movement of the chain drive means for moving the inserts along the track, with the belt means supporting at least a portion of the insert to reduce the friction between the inserts and the insert track as the inserts are moved along the insert track towards the envelope insertion station.

4,494,743

DISPENSER PICKER APPARATUS

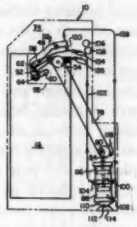
Richard T. Kushmaul, Dallas; James O. Lafevers, Irving, and James E. Webb, Richardson, all of Tex., assignors to Docutel Corporation, Irving, Tex.

Filed Aug. 31, 1981, Ser. No. 297,611
Int. Cl.³ B65H *5/10*
U.S. Cl. 271—11 **16 Claims**

1. In a document dispenser for positively and individually moving flexible thin-sheet documents from a stack to a distribution station, comprising in combination:

a document transport for moving documents from the stack to the distribution station, said transport including a pair of input rollers located adjacent said stack of documents,

separation means including at least one nozzle stationarily positioned at one edge of the document stack to deliver positive fluid pressure to ruffle the edge of the first document for its separation from the remaining documents in the stack,



removal means including at least one vacuum cup to apply negative fluid pressure for removing said first document from the document stack for its delivery to the pair of input rollers of said document transport; and

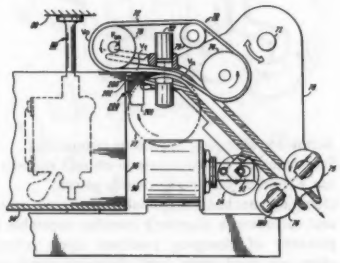
unitary reversible vacuum/pressure supply means connected to said separation means and said removal means for simultaneously applying positive fluid pressure to said nozzle and negative fluid pressure to said vacuum cup during said separation, and for simultaneously and reversibly applying positive fluid pressure to said vacuum cup and negative fluid pressure to said nozzle during positive delivery of said first document to said distribution station.

4,494,744

SHEET FEEDING AND SEPARATING APPARATUS EMPLOYING A MULTIPLE PIECE ENTRANCE GUIDE

Raymond A. Povio, Pittsford, and Robert P. Rebres, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,018
Int. Cl.³ B65H *3/04*
U.S. Cl. 271—34 **3 Claims**



1. A sheet feeding and separating apparatus for feeding and separating sheets individually from a stack of sheets, comprising:

tray means for holding the stack of sheets, said tray means includes elevator means that lifts any sheet to be fed from said tray means to a feeding position above the confines of said tray means so that the sheets in the stack are initially unobstructed as they are fed from the stack;

endless feed belt means mounted in sheet feeding engage-

ment with the top of the stack of sheets and applying a normal force thereto;

said feed belt means being rotatably mounted between spaced supports to provide a deformable unsupported section therebetween;

a retard roll having a curvilinear portion thereof deformably engaging said feed belt means to form a nip therebetween for separating any overlapped sheets reaching the nip; and

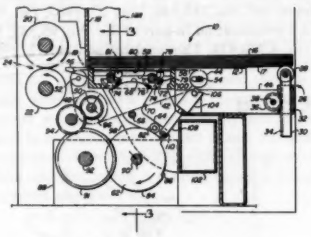
an integrally molded stationary multiple piece entrance guide positioned between said retard roll and said tray means such that said entrance guide is the first obstruction sheets being fed by said feed belt means encounter in route to the nip formed between said retard roll and said feed belt means, said entrance guide includes a high friction urethane first portion with a beveled edge that serves to shingle slugs of sheets and a polycarbonate second portion that supports said first portion, said polycarbonate second portion having an elongated third portion that is cantilevered, said elongated third portion includes an upper surface that terminates at a sharp edge and extends to a position immediately adjacent said curvilinear portion of said retard roll and works in conjunction with an upper surface of said high frictional urethane first portion to support sheets the entire distance from the stack into said curvilinear portion of said retard roll to prevent lightweight sheets from causing jams at the nip formed between said retard roll and said feed belt means.

4,494,745

FEEDING APPARATUS FOR PAPERBOARD SHEETS

William F. Ward, Sr., Hampstead, and John B. West, Glyndon, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Filed Dec. 16, 1981, Ser. No. 331,245
Int. Cl.³ B65H *3/12*
U.S. Cl. 271—95 **9 Claims**



1. Feeding apparatus for feeding sheets successively in timed relation from beneath a stack of sheets comprising in combination:

(a) support means for positioning said stack such that a bottom sheet thereof is aligned with a feed nip defined by a gate means and said support means, said gate means being adapted to meter said sheets one at a time through said nip;

(b) advancing means including a plurality of rotatable endless belt means supported side by side in spaced relation across said support means;

(c) drive means for rotating said belt means unidirectionally from zero to maximum velocity when they are in contact with said bottom sheet and for decelerating said belt means to zero velocity when they are out of contact with said bottom sheet;

(d) shifting means for bringing said bottom sheet into and out of contact with said belt means in timed relation thereto such that said belt means begin rotating after they come into contact with said bottom sheet and stop rotating after they come out of contact with said sheet; and

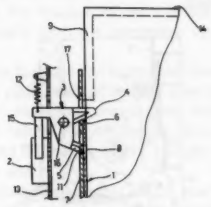
(e) suction means operably connected to said support means and adapted to apply vacuum continuously between said belt means to pull succeeding ones of said bottom sheets against said support means and said belt means.

4,494,746

COPYING MACHINE WITH A CASSETTE GUIDE

Kürt Moser, Gerlingen, Fed. Rep. of Germany, assignor to Develop Dr. Eisbein GmbH & Co., Gerlingen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,238
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 8223544[U]
Int. Cl.³ B65H *1/04*
U.S. Cl. 271—164 **14 Claims**



1. An arrangement for supplying sheets of photocopying paper to a photocopying machine, comprising:

cassette means for holding a stack of sheets of photocopying paper including a first opening in a side wall at the forward end of the cassette means and a second opening in said side wall spaced from said first opening,

cassette guide means for guidably holding the cassette means in an in-use position at a photocopying machine,

and cassette position control means for assuring that the cassette means is in its proper in-use position including a pivotable control lever mounted on the photocopying machine adjacent the guide means and having first and second lever arms,

wherein the rear edge wall of the first opening being engageable against said first lever arm to pivot said control lever toward a machine operating position as said cassette means is inserted, and wherein said second opening serves to accept insertion of said second lever arm therein to permit said control lever to be pivoted toward said machine operating position when said cassette means is properly inserted.

4,494,747

PAPER CURRENCY DISPENSER FRICTION PICKER MECHANISM

Harry T. Graef, Massillon, and Kevin H. Newton, North Canton, both of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Jul. 1, 1983, Ser. No. 510,410
Int. Cl.³ B65H *7/12*
U.S. Cl. 271—263 **21 Claims**

1. Friction picker mechanism for an ATM paper note dispenser of a type in which notes at the end of a note supply stack normally pressed toward said mechanism are separated and picked one at a time from said stack by associated friction areas of a rotatable feed roller and friction separator means when said roller is driven in note feeding direction by drive means; wherein the improvement comprises:

(a) a rotatable feed roller having a smooth cylindrical surface provided with arcuate rubber friction segment means interrupting said smooth surface;

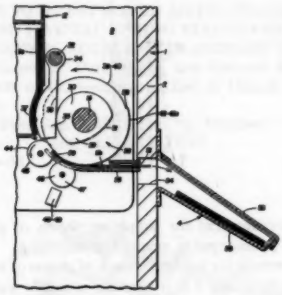
(b) rubber friction separator means directed toward and free of contact with said feed roller;

(c) doubles detector means including note thickness gauging

devices located adjacent said separator means and engaged with and actuated by notes as said notes are fed by said feed roller;

(d) reversible drive means operatively connected with said feed roller which drive means when energized normally drives said feed roller in note feeding direction with said friction segment means engaging and picking stack end notes and driving said notes one at a time successively between said feed roller and said separator means, and then past said thickness gauging devices;

(e) said friction separator means engaging the inner surfaces of and resisting movement of said notes being fed as said notes are driven between said feed roller and separator means, normally to separate doubles from the end notes being fed;



(f) said doubles detector means also including sensor means adapted to sense the detection of unseparated doubles by said note thickness gauging devices when doubles are driven past said note thickness gauging devices; and

(g) said sensor means when sensing the detection of doubles reversing said drive means to return said detected doubles back to said stack by reverse feed roller movement, whereupon normal drive means movement of the feed roller in forward note feeding direction is restored and said drive means again is reversed repeatedly until the doubles are separated from the end note being fed, by said back and forward note scrubbing of the doubles between said friction segment means and said friction separator means.

4,494,748

COLLATOR

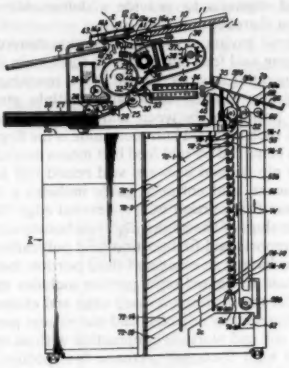
Kiyoshi Miyashita; Muneo Kasuga; Akira Shimizu, all of Hachioji; Fumitaka Ozeki, Inagi; Hiroshi Tsuda, Mitaka; Katsuhiko Kimura, Hino; Nobuoto Hattori, Hachioji; Norio Amemiya, Hachioji, and Masaru Yamazaki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,651

Int. Cl.³ B65H *39/02*

U.S. Cl. 271—288 **11 Claims**

1. A collator for use in combination with an apparatus such as a copying machine, a printing machine, and the like, for delivering a plurality of copies successively, said collator comprising: a plurality of bins arranged in parallel with each other along a copy travelling path; means for feeding the copies along the copy travelling path; means for delivering the copies fed successively along the copy travelling path into successive bins; and means for simultaneously driving selected ones of said delivering means so as to effect copy delivery simultaneously to at least two different bin positions, whereby during a copy delivering operation for a plurality of copies of a certain



manuscript, it is possible to initiate the copy delivering operation for a plurality of copies of the next manuscript.

4,494,749

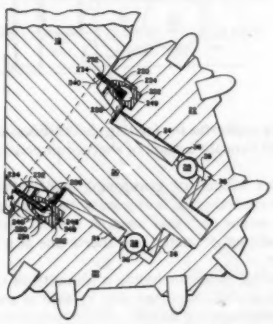
SEAL ASSEMBLIES

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Division of Ser. No. 153,540, May 27, 1980, Pat. No. 4,294,492, which is a continuation-in-part of Ser. No. 95,532, Nov. 19, 1979, Pat. No. 4,240,674. This application Jun. 12, 1981, Ser. No. 272,884

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—22 **17 Claims**



1. A seal assembly operatively positioned between a pair of relatively movable members comprising:

a flank member operatively connected to one of said relatively movable members, said flank member including a sealing contact surface formed thereon;

a projection operatively connected to the other of said relatively moving members, said projection including a sealing surface formed thereon in movable sealing relation with the sealing contact surface of said flank member; and

heat pipe means extending from within the interior of said projection for removing heat from said projection.

4,494,750

EXERCISER FOR RUNNERS

Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 327,869, Dec. 7, 1981, Pat. No. 4,456,248. This application Apr. 30, 1982, Ser. No. 373,557

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—93 2 Claims

1. Structure to enable individual to stretch and pull wherein the amount of stretch may be increased in a controlled manner, said structure comprising:

a partially threaded receptacle;

a first means for threaded engagement with said threaded receptacle and for sliding into and out of said receptacle along a longitudinal axis;

a second means for rotating said first means about said longitudinal axis;

wherein said first means comprises a rod of constant cross-section along its center line, said longitudinal axis extending along the center line of said rod, a threaded portion of the external surface of said rod extending longitudinally of the rod and the remaining portion of the external surface of said rod being non-threaded and wherein said receptacle threads are adapted for engaging said threads of said first means when said first means is oriented rotatably in one position in said receptacle thereby preventing said first means from sliding into and out of said receptacle and for permitting said first means to slide through said receptacle when said first means is rotated about its longitudinal axis a selected amount.

4,494,751

EXERCISE MACHINE

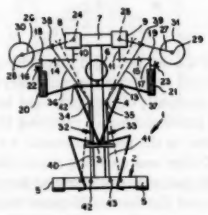
Josef Schnell, Sportweg 9, Gachenbach, (Ortsteil Peutenhausen), Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,678

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140859

Int. Cl.³ A63B *21/06*

U.S. Cl. 272—117 8 Claims



1. An exercise machine comprising:

a frame;

a seat on the frame adapted to support an exercising person in a sitting position;

a pair of upright shafts journaled in the frame and extending along and rotatable about respective upright axes above the shoulders of the person on the seat;

respective horizontal front arms fixed to the shafts;

respective handles carried on the front arms and positioned for engagement with the hands and forearms of the person on the seat;

respective horizontal shafts journaled in the frame and projecting away from the person on the seat;

respective drive means including respective right-angle drives connecting the upright shafts to the respective horizontal shafts for rotation of each of the horizontal shafts synchronously with the respective upright shafts and front arms;

respective rear arms fixed on the horizontal shafts and pivotal in an upright plane, each of the rear arms being generally vertical and extending down from the respective horizontal shaft when the respective front arms are aligned and extend on the respective upright shafts away from each other; and

respective means including weights on the rear arms offset from the respective horizontal shafts for resisting rotation of the shafts in a direction corresponding to displacement of the handles away from the person on the seat with a force that increases as the handles move away from the person on the seat, whereby the chest muscles of the person on the seat can be exercised.

4,494,752

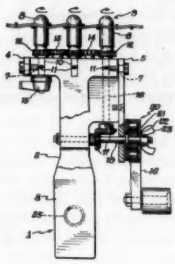
RACKET STRINGER AND TENSIONER

Lynn L. Ray, P.O. Box 3464, San Diego, Calif. 92103

Filed Apr. 11, 1983, Ser. No. 484,071

Int. Cl.³ A63B *51/14*

U.S. Cl. 273—73 A 11 Claims



1. A string tightener for tensioning strings across a frame which comprises:

two levers each having a roller assembly at one end thereof;

means for rockingly linking said levers together near said ends;

resilient means for biasing said two roller assemblies toward each other;

said roller assemblies and said means for rockingly linking being shaped and dimensioned to grippingly purchase a string between said two roller assemblies; and

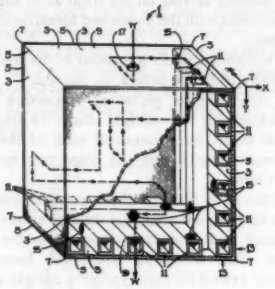
means for driving said roller assemblies in respective opposite rotational directions, comprising a drive mechanism positively coupled to one of said roller assemblies and means for reversibly linking said one roller assembly to said other roller assembly for driving said assemblies in opposite directions.

4,494,753

THREE-DIMENSIONAL TOY MAZE

George S. Wampler, 1701 S. Ditmar St., Oceanside, Calif. 92054

Filed May 24, 1983, Ser. No. 497,605
Int. Cl.³ H63F 7/04
U.S. Cl. 273—113 11 Claims



1. A hand-held toy comprising:

(a) a three-dimensional, six-sided totally enclosed diaphanous object containing a plurality of layers of hollow tubes of equal internal height and width in mutually parallel fixed arrangement;

(1) each said tube in each said layer separated from its neighbor parallel tube by another tube mutually perpendicular thereto;

(2) each said tube having at least one aperture formed in the wall thereof at random locations for passage of a sphere of fixed size therethrough into an adjacent tube to form a three-dimensional maze;

(3) an entrance aperture, formed in one side of said object and in communication with at least one said tube,

(4) an exit aperture, formed in another side of said object in communication with at least one said tube, a size at least equal to said tube apertures; and,

(b) a play ball for passage in through said entrance aperture to the maze and for travel through said maze by gravity when said toy is manipulated about its three axes to exit said maze through said exit aperture.

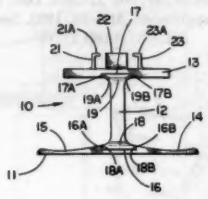
4,494,754

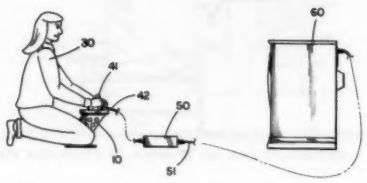
APPARATUS FOR PLAYING HOME VIDEO GAMES

John R. Wagner, Jr., 300 Ashley Dr., Rochester, N.Y. 14620

Filed Sep. 30, 1982, Ser. No. 429,604
Int. Cl.³ A63B 71/00
U.S. Cl. 273—148 B 8 Claims

1. An accessory for aiding a video game player during play of a video game, the video game player operating a video game controller which transmits signals in response to manipulations made on the video game controller by the video game player, the transmitted signals being processed by a computer processor which responsively manipulates images on a television screen, said accessory comprising: a base, said base extending horizontally, said base being positionable on a surface so as to permit a video game player to stabilize said base by placing lower body weight on said base; a riser, said riser extending upward from said base; and a mounting member attached to said riser, said mounting member being positioned over the lap of a player with lower body weight on said base, said mounting





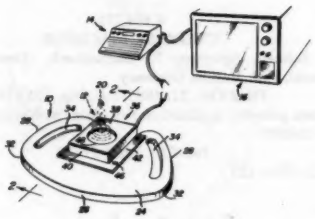
member including means for lockably receiving a video game controller in fixed position on said mounting member.

4,494,755

HOLDER FOR JOYSTICK CONTROLLER FOR VIDEO GAMES

Charles W. Caillouet, Jr., 25 Tradewinds Dr., Galveston, Tex. 77551

Filed Dec. 29, 1982, Ser. No. 454,321
Int. Cl.³ A63B 71/04
U.S. Cl. 273—148 B 18 Claims



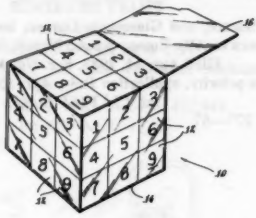
1. A holder for a hand held and manually manipulable controller having a hand held base and manually movable control stick projecting upwardly therefrom, said holder comprising an enlarged rigid panel and means retaining the controller base on the panel, means on the panel to enable it to be stabilized to stabilize the controller and enabling more effective manipulation of the control stick while minimizing hand cramps, muscle fatigue, soreness and the like, said panel including generally planar top and bottom surfaces, said means retaining the controller base on the panel being located along an edge portion of the panel.

4,494,756

CUBE PUZZLE

Gordon E. Winer, Barnard, Vt., assignor to Vermont Toy Works, Inc., Rutland, Vt.

Continuation-in-part of Ser. No. 333,712, Dec. 23, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 554,999
Int. Cl.³ A63F 9/12
U.S. Cl. 273—156 18 Claims



12. A three dimensional cube puzzle comprising:

n^3 individual cube pieces each having six exposed faces, n being an integer greater than 1;

numerical indicia means on each face of each of said n^3 cube pieces, said numerical indicia means being representative of a number selected from a group of n^2 different numbers, each face of each of said cube pieces having one of said numerical indicia means thereon to define a set of six numerical indicia for each cube piece, and substantially all of said sets of six numerical indicia being different and consisting of from two to six different numbers;

support means for holding and displaying a cubic array of said n^3 cube pieces assembled to provide an n by n by n configuration, said cubic array having six exposed surfaces each of which is comprised of n^2 assembled faces of said cube pieces in an n by n configuration, said support means being adapted to maintain said n^3 assembled cube pieces in said cubic array and to permit visual inspection of each of said six exposed surfaces of said cubic array; and

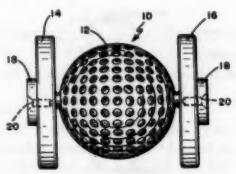
said numerical indicia means for said cube pieces being selected to provide at least 10 different cubic arrays in which, on each of said six exposed surfaces of each such cubic array, said numerical indicia means on said n^2 assembled faces of said individual cube pieces satisfy a predetermined arithmetic relationship between said numerical indicia means.

4,494,757

GOLF PUTTING DEVICE

Luther G. Simjian, Fort Lauderdale, Fla., assignor to Command Automation, Inc., Greenwich, Conn.

Filed Aug. 22, 1983, Ser. No. 525,012
Int. Cl.³ A63B 69/36
U.S. Cl. 273—183 C 1 Claim



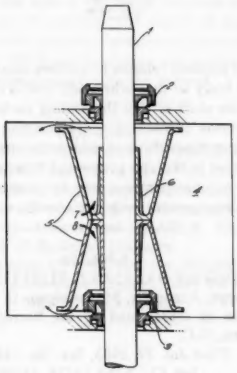
1. A golf putting aid made of plastic material including a pair of concentrically rotating wheels spaced from each other by a distance for being stroked by a putter, a sighting device resembling a golf ball concentrically mounted between said wheels, the diameter of said wheels being slightly greater than that of said ball for causing said ball to be free of rolling contact with an underlying surface upon which said wheels roll when stroked, the improvement comprising: said aid being a unitary molded plastic body, and weight means in the form of a respective disk shaped metal washer fastened concentrically upon the outer radial surface of each wheel for increasing the weight of said body to thereby cause said aid to more closely exhibit the rolling characteristic of a regular golf ball.

4,494,758

MECHANICAL SEAL LUBRICATION DEVICE

Valdemar Carlsson, Solna, and Boris Fredriksson, Huddinge, both of Sweden, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,180
Claims priority, application Sweden, Mar. 24, 1983, 8301618
Int. Cl.³ F16J 15/42, 15/54
U.S. Cl. 277—14 V 4 Claims



1. An arrangement for lubricating a mechanical seal surrounding a rotatable shaft, comprising:

a container for holding a liquid lubricant, located adjacent the seal and receiving at least a portion of the shaft; and

means for transporting the liquid lubricant to the seal, said transporting means being located in the container, being mounted on the shaft for joint rotation therewith, and including at least one element secured to the shaft and extending substantially coaxially therewith, said element having two axially spaced end portions each having at least one opening therein, and bounding an internal passage which diverges from one of said end portions to the other of said end portions that is directed towards the seal.

4,494,759

SEAL FOR RELATIVELY ROTATABLE PARTS

Robert A. Kieffer, 118 Meadowview La., Williamsville, N.Y. 14221

Filed Oct. 31, 1983, Ser. No. 546,915
Int. Cl.³ F16J 15/32, 15/34
U.S. Cl. 277—25 23 Claims

1. A seal for placement about a shaft and for sealing clearance between the shaft and at least two close annular surfaces each adjacent an opening through which the shaft passes, said seal comprising:

a ring-like body of stretchable material adapted to be stretched about the shaft and be thereby placed in a deformed condition and in sealing engagement therearound, said body including a central portion and at least two lip portions extending generally radially outwardly of said central portion and movable relative thereto in a hinge-like manner, each lip portion defining a radially outermost

edge and a sealing surface adjacent said edge for sealingly engaging a corresponding one of the close annular surfaces through which the shaft passes, said sealing surface being relatively short as measured from said outermost edge, said body being of such cross-sectional shape that when it is stretched from an undeformed condition to a deformed condition about the shaft, each one of said lip portions moves from a first angular position to a second

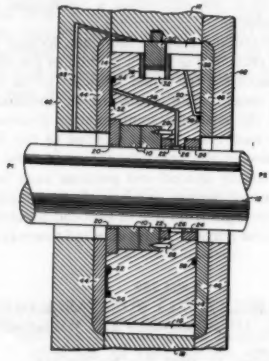
angular position relative to another one of said lip portions of said body so that when said seal is operatively placed about the shaft so that the sealing surface of each of said lip portions contacts a corresponding one of the close annular surfaces through which the shaft passes and each lip portion is thereby prevented from moving to its said second angular position, said lip portions are biased into sealing engagement with the annular surfaces.

4,494,760

PRESSURE BALANCED FLOATING SEAL

John D. Spargo, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,710
Int. Cl.³ F16J *15/28, 15/40*
U.S. Cl. 277—30 **9 Claims**



1. A sealing device for shafts which pass through a wall, said sealing device including at least one annular housing adapted to be mounted around a shaft, said at least one annular housing including a ring-shaped chamber having disposed therein at least one layer of a sealing material adjacent said shaft, wherein the improvement comprises:

an oversized outer ring disposed radially adjacent said at least one annular housing and adapted to permit sliding of said at least one annular housing radially outwardly from said shaft;

at least one antirotation pin extending from the outer ring into said at least one annular housing and adapted to permit radial sliding of said at least one annular housing with respect to said oversized outer ring; and

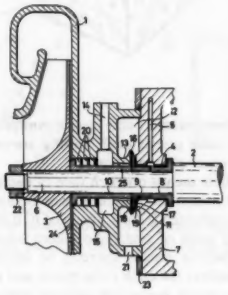
means for balancing frictional forces acting on radial surfaces of said at least one annular housing.

4,494,761

LUBRICATING OIL SEAL DEVICE FOR ROTATING SHAFT BEARINGS

Filippo Surace, and Giampaolo Garcea, both of Milan, Italy, assignors to Alfa Romeo S.p.A., Napoli, Italy

Filed Apr. 14, 1983, Ser. No. 485,042
Claims priority, application Italy, Apr. 15, 1982, 20776 A/82
Int. Cl.³ F16J *15/42*
U.S. Cl. 277—67 **6 Claims**



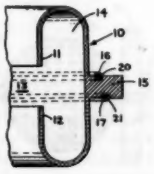
1. A lubricating oil seal device for a bearing supporting a shaft of a turbo compressor rotating in a stator, comprising a lubricating oil collecting chamber in said stator having a drain hole, an annular passage being defined by flat wall portions of said stator and extending perpendicular to said shaft and adjacent said collection chamber and said bearing to allow lubricating oil to flow from said bearing into said collection chamber, a disc member being rigid with said shaft at one end of said bearing and rotatable within said annular passage close to at least one of said flat wall portions to form an annular meatus between said one of said flat wall portions and a flat surface of said disc member opposite said bearing, and a port in said stator providing fluid communication between a radially internal annular portion of said meatus and an external environment.

4,494,762

GASKET AND GASKET MANUFACTURING METHOD

Stanley W. Geipel, Bedminster, N.J., assignor to Hickory Pond Corp., New Brunswick, N.J.

Filed Aug. 4, 1980, Ser. No. 174,808
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—206 R **3 Claims**



1. A gasket comprising a metal tube having a hollow interior, said tube having on one side thereof a pair of spaced jaws to establish a gap formed in said one side thereof in order to establish fluid communication between said hollow interior and the environment outside of said tube, and a fin protruding

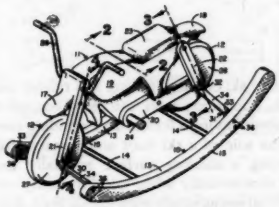
from the other side of said tube, said fin being in general alignment with said gap and having a width that is generally equal to said gap, said metal tube having an annular shape, said gap on said one tube side being oriented toward the center of said annulus, and said fin being disposed radially outward of said annular tube and forming a ring therearound, said ring further comprises at least one generally circular groove formed in the surface thereof, and a fluid seal seated in said circular groove.

4,494,763

WHEELED ROCKER TOY

Richard A. Whitehead, 127 East Hoffman, Spokane, Wash. 99207

Filed Mar. 7, 1983, Ser. No. 472,949
Int. Cl.³ A63G *15/00*
U.S. Cl. 280—1.175 **1 Claim**



1. A wheeled rocker toy comprising, in combination:

rocker structure providing similar opposed elongate rockers in spaced, parallel relationship, each of said rockers having similar arcuate lower surfaces to simultaneously contact a planar supporting surface;

a rigid body structure supported between and above the rockers, said body having

a seat in its upper portion to support a user

paired opposed foot rests in its lower medial portion to support the feet of a user,

handlebar structure in its upper forward portion to support the hands of a user;

forward wheel support structure depending from the forwardmost part of the body structure to rotatably support a front wheel, said wheel being configured and positioned to contact an underlying supporting surface before the rockers have reached their forwardmost rocking limit to then support the forward portion of the toy to allow its forward linear motion relative to the supporting surface; and

rearward wheel support structure depending from the rearwardmost part of the body structure to support a rearward wheel, said wheel being configured and positioned to contact an underlying supporting surface at the time the rockers have reached their rearwardmost rocking position to aid in preventing the toy from tipping rearwardly.

4,494,764

MOTORCYCLE LIFT AND METHOD

Richard W. Kelley, 667 Blaine Ave. NE., Renton, Wash. 98056

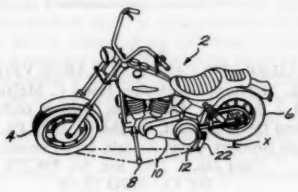
Filed Jan. 27, 1983, Ser. No. 461,622
Int. Cl.³ B62H *1/02, 1/06*
U.S. Cl. 280—293 **14 Claims**

1. For use with a motorcycle of the type having a front wheel, a rear wheel, a frame, and a kickstand on one side of the frame between the front and rear wheels for supporting the motorcycle in a leaning position, a lift stand comprising:

a leg including a ground-contacting foot at one of its ends; and

attaching means for attaching the leg to a rear portion of said one side of the frame rearward of the kickstand and forward of the rear wheel;

said lift stand having a support position in which the foot is in contact with the ground, the leg extends downwardly from the frame to the ground, and the motorcycle is supported on its front wheel, the kickstand, and the lift stand, with the rear wheel being elevated from the ground; and said lift stand being sufficiently close to the rear wheel and



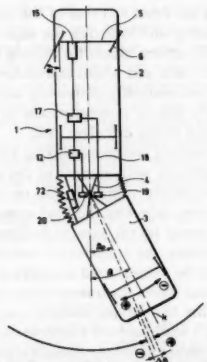
sufficiently long to cause, when the motorcycle is leaned toward said one side of the frame to move the lift stand toward its support position, the center of gravity of the motorcycle to be laterally outside and forward of the lift stand and the lift stand to contact the ground before the kickstand makes contact with the ground.

4,494,765

ANTI-JACKKNIFING DEVICE WITH FRICTION BRAKE FOR ARTICULATED MOTOR VEHICLE

István Ratsko; József Ivony; György Karászi; Jenö Mádi, and Nándor Liptai, all of Budapest, Hungary, assignors to Autóipari Kutató Intézet and IKARUS Karosszéria és Járműgyár, both of Budapest, Hungary

Filed May 13, 1982, Ser. No. 377,690
Claims priority, application Hungary, May 14, 1981, 1330
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—432 **5 Claims**



1. In an articulated motor vehicle having an intermediate unit disposed between two vehicle units and in force coupling therewith, a force coupling bisecting the jackknifing angle and an anti-jackknifing device including a friction brake mechanism coupled to the vehicle units and producing torque around the vehicle articulation, the improvement wherein the friction brake mechanism comprises a brake rod connected to one of the vehicle units with the external surface thereof having a friction surface, a brake bracket surrounding the brake rod and carrying friction brake linings and connected to the other vehicle unit, a brake actuating element disposed in the brake bracket and applying a compressive force on the friction brake linings, wherein the mechanism comprises two brake rods articulated to one of the vehicle units symmetrically with and

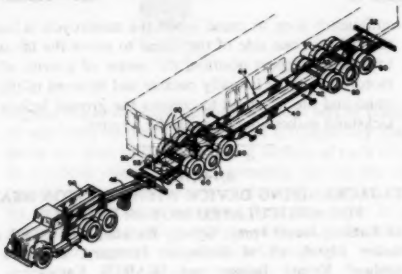
outside of the longitudinal axis of the motor vehicle, two brake brackets and multimember articulated rod systems on which the brake brackets are arranged and which are coupled to the vehicle units with the brake bracket supporting rod member moving in proportion with the jackknifing angle variation.

4,494,766

TRAILER FOR CARRYING LARGE VEHICLES

Edward L. McHugh, Langhorne; James C. McHugh, Penndel; Gerard J. McHugh, Langhorne; William Gallagher, Levittown, and David Schmidt, Langhorne, all of Pa., assignors to McHugh Brothers Crane Rentals, Inc., Penndel, Pa.

Filed Jan. 6, 1983, Ser. No. 456,272
Int. Cl.³ B62D *13/04*
U.S. Cl. 280—444 **19 Claims**



7. A drawbar trailer for transporting rapid transit subway cars, railcars and like vehicles having internal suspension systems, the trailer having a load support platform carried by at least one front and at least one rear axle and steerable wheel assembly, the trailer comprising:

adjustable resilient means disposed between the platform and the front and rear axles for selectively raising and lowering the front and rear of the platform and for selectively raising and lowering the sides of the platform;

hydraulically driven means for turning the wheels of at least one of the axle and wheel assemblies;

means for automatically activating and controlling the hydraulically driven turning means in response to pivotal movements of the drawbar; and,

means for holding and immobilizing the bodies of the transported vehicles with respect to the platform, preventing movement of the vehicle bodies on their internal suspension systems, whereby the load support platform may be inclined about its tilt axes to facilitate loading, carrying and unloading the transported vehicle and whereby the trailer can be maneuvered as easily as smaller trailers.

15. A drawbar trailer for transporting very long, very heavy vehicles and the like having internal suspension systems, the trailer having a load support platform carried by at least one front and rear steerable wheel assembly, the trailer comprising;

adjustable resilient means disposed between the platform and the front and rear axles for selectively raising and lowering the front and rear of the platform and for selectively raising and lowering the sides of the platform;

means for automatically turning the wheels of at least one of the front and rear axles and steerable wheel assemblies in response to pivotal movements of the drawbar;

power driven means for selectively turning the wheels independently of one another and independently of the drawbar movement; and,

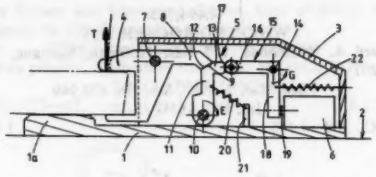
means for holding and immobilizing the bodies of the transported vehicles relative to the platform, preventing movement of the vehicle bodies on their internal suspension systems.

4,494,767

LOCKING DEVICE FOR A SKI BINDING

Christian Campillo, Garchizy, and Jean-Pierre Michaud, Clamart, both of France, assignors to Ste Look, Nievre, France

Filed May 3, 1982, Ser. No. 373,844
Claims priority, application France, May 22, 1981, 81 10210
Int. Cl.³ A63C *9/084*
U.S. Cl. 280—612 **3 Claims**



1. In a safety ski binding locking and release mechanism for holding a ski boot upon a ski, the improvement comprising a compound lever having a forwardly extending portion adapted to engage the sole of a ski boot and a rearwardly extending portion having a slanting surface normally extending forwardly and downwardly when said forwardly extending portion is in normal engagement with the ski boot, means pivotally mounting said compound lever on said ski about a transverse axis between said forwardly and rearwardly extending portions, a second lever pivotally mounted on said ski about a transverse axis at its lower end, and having at its upper end a forwardly and downwardly extending first surface normally engaging the slanting surface of the rearwardly extending portion of said compound lever, and a second bearing surface extending rearwardly from said first surface, a third right-angled lever pivotally mounted about a transverse axis on said ski having a normally horizontal forwardly extending arm whose end bears against the second bearing surface of said second lever, and a normally downwardly extending arm, an electromagnet having a plunger mounted on said ski with the end of its plunger contacting the lower end of said downwardly extending arm, first spring means urging the end of said downwardly extending arm to a vertical position against the end of said plunger and the end of said forwardly extending arm against the second bearing surface of said second lever, and second spring means urging said second lever in a rearward direction about its pivot, its second bearing surface against the front end of said forwardly extending arm of the third lever and its first surface against the slanting surface of said compound lever to hold the forwardly extending portion of the latter against the ski boot, whereby upon energization of said electromagnet in response to extraordinary vertical forces upon the ski boot, its plunger acts upon the downwardly extending arm of the third lever against the action of said first spring to rotate said third lever upwardly to disengage the front end of the forwardly extending arm from the second bearing surface of said second lever, whereupon said second lever pivots rearwardly under the action of said second spring and said compound lever is permitted to pivot to release the ski boot under the action of the upward forces thereon.

4,494,768

APPARATUS FOR PROGRAMMED RELEASE IN SKI BINDINGS

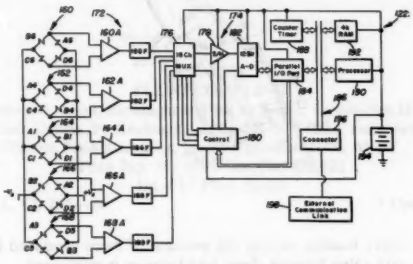
Maury L. Hull, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 162,413, Jun. 24, 1980, Pat. No. 4,371,188. This application Feb. 1, 1983, Ser. No. 463,008
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—612 **1 Claim**

1. In a ski binding for releasably securing a ski boot to a ski,

means for minimizing injuries in a lower extremity of a skier, said means comprising:

strain gauge means for measuring a plurality of mechanical deflections induced in said ski binding from interaction between said skier and said ski, and for developing a plurality of first electrical signals, each of said first signals being determined from a different one of said deflections; means for developing a plurality of second electrical signals determined from a relationship between said first signals, said second signals defining a measurement of forces along first selected ones of longitudinal, lateral, and vertical axes of said ski and moments about second selected ones of said axes, said mechanical deflections occurring in response to said forces and said moments; computer means for computing from said second signals an actual angle of deflection as a function of a preprogrammed relationship between said second signals, said actual angle of deflection being about a location of said lower extremity of the skier and further resulting from said forces and said moments, said location being selected to prevent injury thereto; and means for comparing said actual angle of deflection with a predetermined critical angle of deflection for initiating release of said ski binding in the event said actual angle exceeds said critical angle.



4,494,769

SKI-BINDING TOE ABUTMENT MEMBER FOR A SKI BOOT HAVING A TRUNCATED SOLE

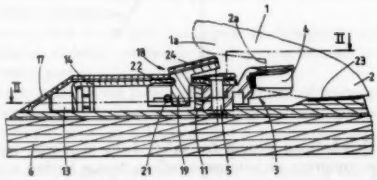
Jean J. A. Beyl; Philippe Buzon, both of Nevers; Christian Campillo, Garchizy; Jackie Cursillat, Germigny sur Loire; Daniel Le Faou, Vauzelles, and Henri Peyre, Nevers, all of France, assignors to Ste Look, Nevers, France

Filed Jun. 9, 1982, Ser. No. 386,662

Claims priority, application France, Jun. 30, 1981, 81 12819

Int. Cl.³ A63C *9/085*

U.S. Cl. 280—630 **7 Claims**



1. A ski-binding toe abutment member adapted to cooperate with a ski boot having a ski boot upper and provided with a sole having a truncated front end and a tow-cap extension in overhung relation to said truncated front end, comprising a jaw unit formed by two arms, extending about and retaining the said truncated front end of the sole, said retaining arms being rotatably mounted on at least one vertical pivot, a resilient mechanism acting upon said arms to lock the same in a boot-retaining position thereby providing an adjustable force or inherent stiffness of release, and a feeler element adapted to be in contact with the toe-cap extension of the ski boot and positioned to produce action on the resilient locking mechanism in the event of a forward fall in order to reduce the inherent stiffness of release of said mechanism said feeler element including a yoke extending transversely with respect to the ski, said feeler element being placed beneath the toe-cap extension of the ski-boot upper in close proximity to said toe-cap extension during normal skiing and being vertically displaceable in a downward direction under the thrust exerted by said toe-cap extension at the time of a forward fall the toe-cap extension of the ski-boot upper causing a downward pivotal displacement of the yoke about an axis transverse to the ski which exerts correlatively on said resilient mechanism, a thrust which tends to move said resilient mechanism away from the jaw unit to produce a reduction in said inherent stiffness of release.

4,494,770

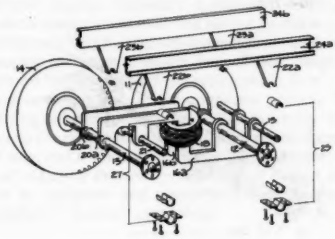
VEHICLE SUSPENSION SYSTEM

Charles W. Reynolds, 350 E. 13th St., Beaumont, Calif. 92223

Filed May 25, 1983, Ser. No. 498,105

Int. Cl.³ B60G *5/02*

U.S. Cl. 280—685 **5 Claims**



1. In combination with a vehicle body a suspension, an axle bearing a pair of wheels, an arm positioned in front of and parallel to and spaced from said axle, and rigidly secured thereto, means at each side of said arm extending vertically thereto to support said vehicle body said support means having bearing surfaces in engagement with said arm to permit axial movement with respect thereto, a rigid member secured to said arm and said axle and extending centrally beyond said axle beneath the vehicle body with means for supporting a cushioning member, and another rigid member in engagement with the opposite side of said cushioning member at one end with its other end in supporting engagement with the vehicle body, said cushioning member being positioned vertically between said rigid members.

4,494,771

SUSPENSION SYSTEM WITH U-JOINT MOUNTED LOAD CARRYING TORQUE ARM

John E. Raidel, Rte. 9, Box 400M, Springfield, Mo. 65804

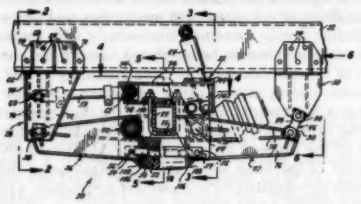
Continuation-in-part of Ser. No. 341,565, Jan. 21, 1982, Pat. No. 4,445,707, and a continuation-in-part of Ser. No. 431,755, Sep. 30, 1982, Pat. No. 4,465,298, which is a continuation-in-part of Ser. No. 341,474, Jan. 21, 1982, abandoned. This application Aug. 17, 1983, Ser. No. 523,964

Int. Cl.³ B60G *5/00*

U.S. Cl. 280—711 **11 Claims**

1. A vehicle suspension to support a chassis from at least one axle having an axle seat assembly for mounting the axle to the suspension, parallelogram means for pivotally connecting to and extending between a chassis member and the axle seat assembly to stabilize same, said parallelogram means including first and second load carrying torque arms for pivotally connecting to and extending between the axle seat assembly and a

chassis member, a U-joint associated with each torque arm to pivotally mount an end thereof, said torque arms being



mounted in opposition to each other, and a central spring means disposed between said torque arms and compressed thereby to resist axle loading.

4,494,772

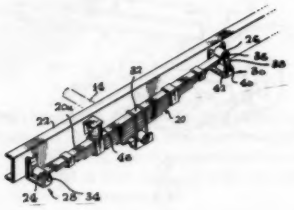
ANTI-ARCH VEHICLE SUSPENSION

Paul Smith, 16700 Gledhill, Sepulveda, Calif. 91343

Filed May 12, 1983, Ser. No. 494,081

Int. Cl.³ B60G *11/46*

U.S. Cl. 280—712 **3 Claims**



1. A vehicle comprising:

a vehicle frame;

a pair of front wheels coupled to said frame;

a pair of rear wheels;

a pair of rear leaf springs;

a rear axle connected to middle portions of said leaf springs;

front and rear connectors associated with each leaf spring, each connector continually connecting a corresponding end of a leaf spring to said vehicle frame; and

a pair of air sleeves, each disposed between a leaf spring and said vehicle frame and supporting some of the frame weight on the spring, each sleeve connected to a spring location that is forward of the rear axle, said location spaced forward of the rear axle by a distance between 25% and 50% of the distance between the rear axle and the front end of the spring where it is held by the front connector.

4,494,773

TILTABLE STEERING FOR INDUSTRIAL VEHICLE OR THE LIKE

Osamu Fukui, Musashimurayama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 31, 1982, Ser. No. 413,530

Claims priority, application Japan, Sep. 30, 1981, 56-155978

Int. Cl.³ B62D *1/18*

U.S. Cl. 280—775 **3 Claims**

1. A tiltable steering arrangement for a vehicle having a body, comprising:

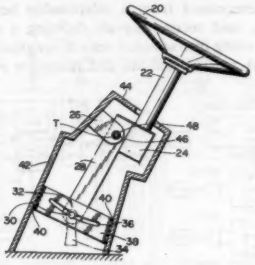
a steering wheel;

a steering column operatively connected at one end thereof with said steering wheel;

a valve housing mounted at a second end of said steering column;

a first bracket connected with said valve housing at a first end thereof;

a second bracket connected with said vehicle body, said second bracket pivotally supporting said steering wheel and steering column at a location in close proximity of said



valve housing so that the moment of force produced by said valve housing about said location is minimized;

locking means mounted at a second end of said first bracket so as to be remote from said location; and

a third bracket connected with said vehicle body, said third bracket being arranged to cooperate with said locking means in a manner to permit the second end of the said first bracket to be selectively locked thereto.

4,494,774

BELT BAND-CLAMPING ARRANGEMENT FOR SAFETY BELTS IN MOTOR VEHICLES

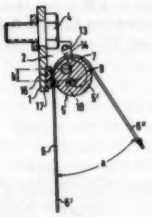
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany

Continuation of Ser. No. 550,981, Nov. 10, 1983, abandoned, which is a continuation of Ser. No. 296,166, Aug. 25, 1981, abandoned. This application May 3, 1984, Ser. No. 606,850

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032169

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **10 Claims**



1. Belt-braking system for safety belts in motor vehicles, which comprises an automatic roll-up device having a roll-up roller on which a safety belt is wound and which normally is unwound by pulling the belt against the force of a spring and which belt during abnormal operation exerts an increased torque, a belt-brake having a swivelable deflector roller member with a cambered deflector surface partly wrapped around by said belt from said automatic roll-up device, a fitting in which said deflector member is eccentrically supported to swivel about an axis with the cambered deflector surface eccentric to the axis, said deflector fitting staged behind the automatic roll-up device as a separate unit, a clamping member with a clamping surface spaced from said deflector surface to

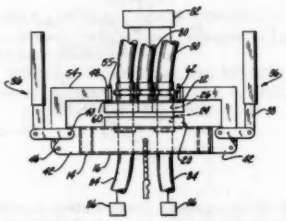
permit free movement of the belt between the deflector surface and the clamping surface, said deflector surface serving both as a clamping surface and as a deflector surface for the belt, spring means urging the deflector surface away from the clamping surface during normal operation after the belt has been put on, said increased torque during abnormal operation countering said spring means and swiveling the eccentrically supported deflector member with its deflector surface moving against the clamping surface clamping the belt therebetween.

4,494,775

FLUID COUPLING

Robert W. Nash, Birmingham; Paul R. Andre, Farmington Hills, and Dennis F. Knoblock, Utica, all of Mich., assignors to William Nash Company, Inc., Farmington Hills, Mich.

Filed Sep. 30, 1982, Ser. No. 431,832
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—26 **4 Claims**



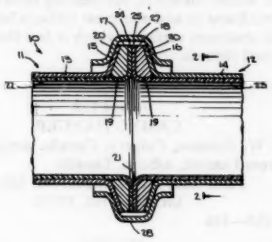
1. A plural fluid coupling comprising:
a first plate,
a plurality of fluid connectors, each fluid connector comprising a male part and a female part movable with respect to each other between a fluidly coupled position and a fluidly uncoupled position,
means for securing said male parts of said fluid connectors to said first plate,
a second plate,
means for securing said female parts of said fluid connectors to said second plate so that, with said plates positioned adjacent each other, said male and female parts of each fluid connector are aligned with each other,
means for moving said plates toward each other and said fluid connector parts from said uncoupled position to said coupled position,
wherein each male part comprises an elongated tapered conduit slidably receivable in a opening formed in said female part,
wherein said moving means comprises a pair of levers pivotally mounted to opposite sides of one of said plates and movable between a locking and a nonlocking position, said levers each having an elongated portion which abut against and along opposite sides of the other of said plates when said levers are in said locking position, said lever elongated portions being spaced apart and parallel to each other, and
wherein each lever elongated portion includes two ends which terminate adjacent opposite ends of the other of said plates when said levers are in said locking position
means at spaced intervals along each of said lever elongated portions for varying the distance between each of said lever elongated portions and said one plate when said levers are in said locked position.

4,494,776

JOINT FOR PLASTIC LINED LIGHT-WEIGHT METAL PIPING

Irving D. Press, West Orange, N.J., assignor to UMC Industries, Inc., Stamford, Conn.

Filed May 23, 1983, Ser. No. 496,883
Int. Cl.³ F16L *9/14, 23/00*
U.S. Cl. 285—55 **7 Claims**



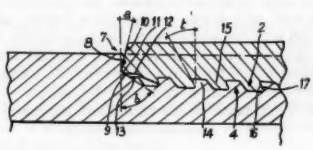
1. A lined piping assembly comprising in combination a component of light-weight metal piping having a connector portion flared radially outwardly at less than 90° to form a frusto-conical flange; a seal load ring having an inside diameter substantially matching that of said connector portion, a tapered face engaging the outer concave face of said flange, and a radial face on the side away from said tapered face; a plastic pipe lining extending out of said connector portion, through said load ring, where it is flared radially outwardly over said radial face of the ring to form a gasket portion and thereby trap said load ring; and a V-clamp for encircling said frusto-conical flange and engaging the convex side thereof behind said concave face to compress said plastic gasket portion against a mating surface of another component.

4,494,777

CLOSED ANGLE THREAD PIPE JOINT

Jean Duret, Montpellier, France, assignor to Vallourec, S.A., Paris, France

Continuation of Ser. No. 191,993, Sep. 29, 1980, , which is a continuation of Ser. No. 077,933, Sep. 24, 1979, , which is a continuation of Ser. No. 818,246, Jul. 22, 1977,. This application May 23, 1984, Ser. No. 613,751
Claims priority, application France, Jul. 23, 1976, 76 22543
Int. Cl.³ F16L *9/14*
U.S. Cl. 285—55 **14 Claims**



1. A pipe joint comprising male and female members having coengaged conical threads, said male member having an external shoulder in abutting contact with a shoulder on the end of said female member where said threads are screwed tightly together, the bearing flanks of said threads on said male member which are opposed to said external shoulder, and the companion bearing flanks on the threads on said female member, being inclined toward said external shoulder at an acute angle with respect to the axis of said joint to provide interlocking threads, said threads being formed to have progressively diminishing heights in the vicinity of said shoulders and to vanish closely adjacent thereto, said shoulder on said female member comprising an annular internal concave sealing surface surrounded by an annular peripheral convex abutment surface,

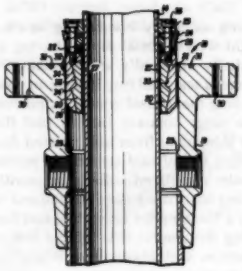
said shoulder on said male member comprising a convex internal annular sealing surface and a concave external annular abutment surface, said concave sealing surface on said female member and said convex sealing surface on said male member engaging one another when said joint is made up to provide a fluid-tightness against internal as well as external fluid pressure, said abutment surfaces and said bearing flanks of said threads providing an interlocking action of the threads and an increase of the sealing forces on said sealing surfaces of the male and female members, the bearing flanks of said threads which are closest to said abutment surfaces being at a distance from said abutment surfaces which is less than two times the pitch of said threads.

4,494,778

CASING HANGER

Clarence W. Johnson, Calgary, Canada, assignor to Bralorne Resources Limited, Alberta, Canada

Filed Mar. 22, 1982, Ser. No. 360,561
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—146 **10 Claims**



1. A casing hanger for use in supporting production well casing within a casing head having an internal surface adjacent the upper end thereof, said casing hanger comprising slip bowl means operable to be seated on a shoulder within said casing head, slip means cooperating with said slip bowl means and having threads thereon adapted to grip said well casing, flexible seal means supported across its bottom area by said slip bowl means, cap wedge plate means, spreader means below said cap wedge plate means having an external surface for cooperating with said casing head internal surface, lower wedge plate means between said flexible seal means and said spreader means and attachment means threadedly engaging said slip bowl means and retaining said slip bowl means, said flexible seal, said lower wedge plate means, said spreader means and said cap wedge plate means, whereby the spreader means external surface contacts the internal surface of the casing head which tends to separate the cap wedge plate from the lower wedge plate to compress the flexible seal means and to create a seal between the casing and the casing head.

4,494,779

CONNECTOR FITTING FOR ELECTRICAL BOX

Steven W. Neff, Clinton, Iowa, and Richard J. Borsh, Chagrin Falls, Ohio, assignors to Thyssen-Bornemisza Inc., New York, N.Y.

Filed Jul. 14, 1982, Ser. No. 398,096
Int. Cl.³ F16L *3/02*
U.S. Cl. 285—159 **2 Claims**

1. A synthetic resin connector fitting for interconnecting an externally corrugated conduit with an electrical box having a wall with an aperture therethrough, said connector fitting comprising:

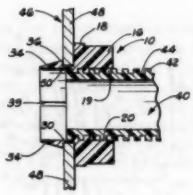
a pair of semi-cylindrical collars, each of said collars including a concave inner side having alternating grooves and ribs formed therein for the reception of a corrugated conduit, and having a concave outer side, each of said collars further including:

a semi-cylindrical body portion having a rectagular cross-sectional axial configuration; and

a peripheral, radially outwardly extending facing flange on the concave outer side of the respective collar and adjacent one end thereof;

a flexible hinge web interconnecting the semi-cylindrical collars by connection to the peripheral, radially outwardly extending facing flange on each of said collars, said hinge web facilitating the pivotation of the semi-cylindrical collars into a cylindrical collective array in which said collars abut each other along a common plane extended diametrically across the cylindrical collective array, and alternately, facilitating the pivotal opening of said collars apart from each other so that each of said semi-cylindrical body portions lies along a common plane;

a pair of spaced, box-engaging projections extending axially from each of said semi-cylindrical collars at the end thereof adjacent which the respective facing flange is located, each of said box-engaging projections having an



arcuate cross-sectional configuration conforming to a segment of a circle of substantially less than 90° of arc, and said projections each further including:

a flexible web portion connected to the semi-cylindrical body portion of the respective one of said semi-cylindrical collars; and

a wedge-shaped outer end portion connected to the web portion and defining with said web portion and with said semi-cylindrical body portion of the respective collar, an arcuate box wall-receiving recess, said recess being spaced from all of the ribs on the respective collar in an axial direction toward said wedge-shaped outer end portion, said box-engaging projections being dimensioned and positioned on their respective collars so that adjacent projections in a pair of projections in which the two projections of said pair are located on different collars are spaced from each other when said collars are pivoted into a cylindrical array with the semi-cylindrical body portions thereof in abutting contact with each other whereby the wedge-shaped outer end portions of said projections can flex freely radially inwardly without contacting and interfering with each other.

4,494,780

LIQUID PIPING SADDLE ASSEMBLY CONNECTING A BRANCH PIPE TO A MAIN PIPE

Curtis E. Burnett, Seattle, Wash., assignor to Romac Industries, Inc., Seattle, Wash.

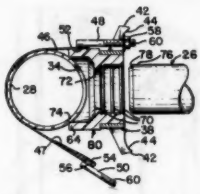
Filed Aug. 17, 1981, Ser. No. 293,664
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—177 **10 Claims**

9. A liquid piping assembly to connect a lateral pipe to a main pipe comprising:

(a) an elastomeric gasket having in line two hollow cylinders, one larger than the other, the smaller of the said two cylinders adapted to sealably receive an end of the lateral

pipe, and the larger of said two cylinders adapted to sealably conform without modification to a large range of diameters of main pipe;

(b) a hollow metal cylindrical collar slidably received about the smaller of the said two cylinders of the gasket and



abutting the larger of the said two cylinders of the gasket at its intersection with said smaller cylinder; and

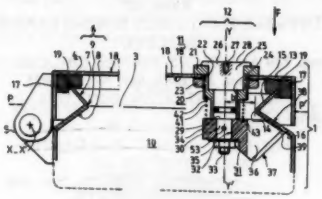
(c) an adjustable fastening means to draw the metal collar toward the main pipe, thereby compressing the elastomeric gasket against the main pipe.

4,494,781

SELF-LOCKING LOCK ASSEMBLY

Jean Lafosse, Mareil Marly, France, assignor to La Telemecanique Electrique, France

Filed Sep. 29, 1982, Ser. No. 427,025
Claims priority, application France, Oct. 6, 1981, 81 19125
Int. Cl.³ E05C *5/02*; E05B *65/44*
U.S. Cl. 292—60 **5 Claims**



1. In combination:

i- a wall having an opening delimited by a frame, said frame having outer and inner surface portions joining along a protruding rim and a door having outer and inner faces and being mounted for displacement along a predetermined path for closing the said opening through co-operation with said frame, the portion of said path which is in proximity of the opening being substantially at right angles with the plane of said opening, said door having an aperature;

ii- a hollow lock body mounted in the said aperture and an elongate operating member mounted within the said lock body for angular displacement about an axis substantially at right angles with the plane of the door, said operating member having inner and outer ends and operating means projecting from the outer face of the door at the outer end of said operating member;

iii- a bolt mounted for angular displacement about the said axis at the inner end of said operating member, said bolt having outer and inner projecting surface portions joining along a protruding rim;

iv- a torsion spring connecting the lock body to the bolt and normally biasing said bolt into a first angular position;

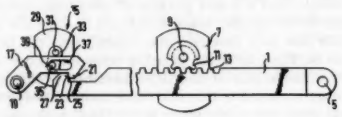
v- the innner surface portions of said frame and of said bolt being more remote from the door inner face than the outer surface portions of said frame and of said bolt respectively; the protruding rim of the frame being located nearer from the said axis than the protruding rim of the bolt when the door is displaced along the said portion of the path; the inner projecting surface portion of the bolt being shaped for cooperation with the outer surface portion and with the protruding rim of the frame which effects a camming action for angularly displacing the bolt against the action of the torsion spring until the rim of the bolt is located nearer from the axis than the rim of the frame; and the outer projecting surface portion of the bolt being shaped for locking engagement with the inner surface portion of the frame.

4,494,782

DRIVE DEVICE FOR A FASTENING MECHANISM OF A MOTOR VEHICLE DOOR LOCK OR THE LIKE

Manfred Lutz, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,441
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210924
Int. Cl.³ E05C *3/14*
U.S. Cl. 292—96 **14 Claims**



1. Drive device for a fastening mechanism of a motor vehicle door lock or the like, comprising:

(a) a housing;

(b) an operating element guided linearly displaceably on said housing between a fastening position and an unfastening position, for said fastening mechanism of said lock,

(c) an operating drive driving said operating element in both directions of displacement,

(d) a locking lever, a pivot spindle pivotally mounting said locking lever on said housing about an axis extending transversely of the direction of displacement of said operating element, which locking lever in its locking position blocks said operating element in its fastening position and in its unlocking position releases said operating element,

(e) a rotating drive held on said housing, a drive-output shaft of which is arranged approximately parallel to said pivot spindle of said locking lever,

(f) an eccentric seated fast in rotation on said drive-output shaft of said rotating drive and pivoting said locking lever,

(g) said locking lever comprises at least one stop face on which said eccentric and/or a part firmly coupled with it rests in said locking position and in said unlocking position of said locking lever and which limit the rotating movement of said eccentric and in that said eccentric is so formed and arranged that in said locking position and/or said unlocking position of said locking lever it is situated in a beyond-dead-point-position in which forces exerted upon said locking lever in the direction towards its other position in each case press said eccentric or said part coupled with it against said stop faces of said locking lever.

4,494,783

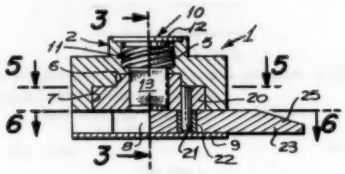
FLUSH TYPE ROTARY DRIVE FOR LATCHES

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Division of Ser. No. 159,594, Jun. 16, 1980, abandoned, which is a continuation of Ser. No. 20,506, Mar. 14, 1979, Pat. No. 4,265,474, which is a continuation of Ser. No. 856,504, Dec. 1, 1977, abandoned. This application Mar. 9, 1982, Ser. No. 356,379

Int. Cl.³ E05C *1/06*

U.S. Cl. 292—155 **7 Claims**



7. A flush mounted rotary drive latch for a panel having a perforation therethrough, comprising;

a. a latch body having a bore therethrough for alignment with the perforation, the upper portion of said bore being circular with multiple screw threads formed thereon, the lower portion of said bore being enlarged to have an increased diameter;

b. a drive member including a first end, an upper portion adjacent to said first end and having multiple screw threads, and a lower portion of polygonal cross-section, said drive member being fitted into said bore in said body such that said first end may extend into the perforation and be flush with the panel, a polygonal bore along the longitudinal axis of said drive member, a polygonal plug spring-mounted within said drive member polygonal bore, said plug extending so as to be flush with the adjacent panel;

c. an annular drive disk with a polygonal bore as its center receiving said lower portion of said drive member, said drive disk being fitted about said drive member in said enlarged lower portion of said bore;

d. a latch element within said body beneath said drive disk, said latch element having a slot formed therein and being slidable in said body; and,

e. a pin-roller radially offset from said bore on said annular drive disk and slidably connecting said slot in said latch element and said drive disk.

4,494,784

DOOR-STOP FOR THE HANDICAPPED

Harvey H. Haynes, 333 Laurel Ct., Oxnard, Calif. 93030

Filed Dec. 7, 1981, Ser. No. 327,759

Int. Cl.³ E05C *17/12;* E05F *5/02*

U.S. Cl. 292—233 **8 Claims**

1. A self closing door in combination with a door stop mechanism, said door stop mechanism comprising:

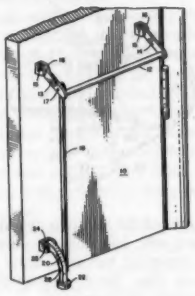
an elongate bar pivotally mounted cross-wise of said door about a pivot at a height to be easily reachable from a sitting or standing position;

door-stop means pivotally mounted adjacent the lower edge of said door constructed and arranged to hold said door in an open position;

linkage means linking said bar to said door-stop means;

said linkage means being pivoted to said bar about a pivot axis parallel to said bar pivot axis;

said linkage means being constructed and arranged so that a downward force applied to said bar moves said linkage means pivot axis from an over-centered position above said bar pivot axis to a lowered non over-centered position to simultaneously pivot said door-stop from a raised position to a down position to hold said door open and an upward force on said bar moves said linkage means pivot axis from said non over-centered position to said over-centered position above said bar pivot axis to simultaneously pivot said door-stop means from said down position to



said raised position; said over-centered position of said linkage means pivot axis locking said bar and said door-stop in a raised position to allow said door to return to a closed position;

whereby said door may be easily held open for passage and closed after passage therethrough.

4,494,785

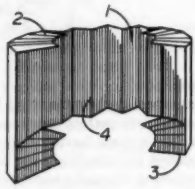
ADJUSTABLE HANDHELD ROUND SANDWICH HOLDER

Ho K. Song, 130 Arch St., #5, Redwood City, Calif. 94062

Filed Jun. 20, 1983, Ser. No. 505,835

Int. Cl.³ A47J *47/14;* B65D *5/24*

U.S. Cl. 294—1 R **5 Claims**



1. An adjustable hand held sandwich holder, said sandwich holder having an elongated central body, a left end portion and a right end portion, said end portions each being contoured with respect to one another, to form a open receptacle for enveloping and for receiving a circumferential portion of a sandwich placed therein;

said elongated central body comprising substantially parallel equidistant accordian fold lines transversely disposed to the longitudinal axis of said elongated central body;

said right end portion and said left end portion each comprising upper and lower appendages which extend substantially perpendicular from said elongated central body to envelope and to receive the circumferential portion of the sandwich;

said appendages each being composed of plural overlapping tab sections to form sidewalls of said open receptacle;

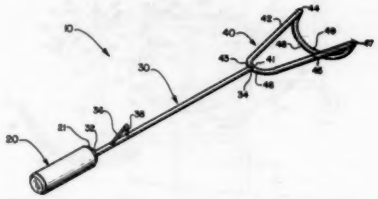
wherein said equidistant accordion fold lines of said elongated central body portion accommodate a systematic contraction of said right end portion and said left end portion as the sandwich is being consumed.

4,494,786

PIZZA OVEN TOOL

John R. Paulus, and Marvin C. Keck, both of Wichita, Kans., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Jul. 25, 1983, Ser. No. 516,791
Int. Cl.[3] A47J 45/10, 49/00
U.S. Cl. 294—26 11 Claims



1. A pizza oven utensil for manipulating pizza pans having a base and a side wall depending upwardly from the base and defining an upper rim, comprising:

a handle constructed of a heat resistant material; a rod having a first end connected to the handle and a second end;

guiding means, defined by the second end of the rod, for pushing the pizza pans into an oven by abutting the side walls of the pizza pans and for pulling the pizza pans out of the oven in a controlled manner by engaging the rims of the pizza pan inwardly of the side walls; and

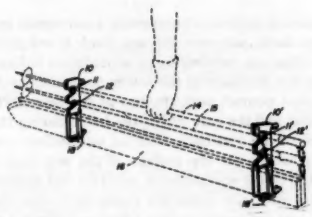
stopping means, defined by the rod, for externally positioning the second end of the rod in the oven, such that when the pizza pans are pushed a preselected distance into the oven the stopping means is effective to impede further insertion of the pizza pans in the oven.

4,494,787

FOLDABLE SKI AND POLE CARRIER

Michael D. Gainey, 2620 Del Monte La., Reno, Nev. 89511

Filed Jul. 25, 1983, Ser. No. 517,146
Int. Cl.[3] B65D 71/00
U.S. Cl. 294—147 7 Claims



1. A ski and pole carrier unit adapted to be used to secure the skis and poles together, said unit comprising:

a flat rectangular block having a pair of slots projecting inwardly from the long sides of the block and slightly toward one of the short sides, the width of each slot being sufficient to accommodate a ski pole;

an L-shaped member pivotably attached to the block proximate the other of the short sides and foldable from a position flush with two sides of the block to a position extended from the block so that the base of the L-shaped member is parallel to said other short side and defines a space for receiving a pair of skis in the plane of the poles so that the skis and poles are coplanar; and

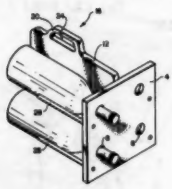
a pair of straps attached to the block, one strap adapted to secure the poles to the slots and the other strap adapted to secure the skis to the L-shaped member, whereby the skis and poles are secured in a common plane by a pair of the units to facilitate carrying of the skis and poles and attachment of the skis and poles to a ski rack without removing the carrier units, the carrier units being removed from the skis and poles during skiing and being sufficiently small when folded to fit in the skier's pocket.

4,494,788

HAND PORTABLE BOTTLE RACK

James L. Altemose, Malvern, Pa., assignor to Creative Environments, Inc., King of Prussia, Pa.

Filed Sep. 29, 1982, Ser. No. 427,842
Int. Cl.[3] B65D 11/14
U.S. Cl. 294—161 10 Claims



1. A hand portable bottle rack comprising

a front panel having a plurality of spaced-apart openings for receiving the necks of bottles and for restraining movement of the bottles through the openings,

a divider panel joined to the front panel between two horizontally adjacent openings and extending rearwardly,

a pair of pegs extending rearwardly from the front panel, each positioned on a different side of said front panel below and toward the outside edge of a corresponding one of the two openings, said pegs being spaced from the divider panel a distance less than the width of the bottles to be supported, and

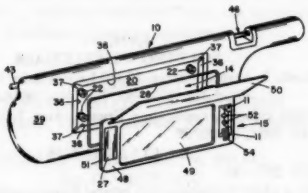
a handle connected to the top of the divider panel at a location rearwardly of the front panel so that when the handle is grasped and lifted by a person, the front panel tends to hang lower than the rest of the rack.

4,494,789

VISOR COVERING

Carl Flowerday, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed May 2, 1983, Ser. No. 490,363
Int. Cl.[3] B60J 3/00
U.S. Cl. 296—97 H 20 Claims



1. A vehicle visor comprising:

a visor body having a central recess formed therein through one side of said body, said recess enclosed at an opposite side of said body and including boundary wall means extending generally orthogonal to the plane of said visor body;

upholstery material surrounding said visor body and including an edge portion extending into said recess to said enclosed side; and

a frame member having a shape conforming to said recess

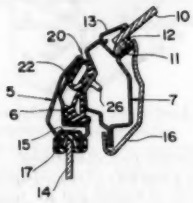
and fitted within said recess adjacent said enclosed side to compressibly hold said edge portions of said upholstery against said boundary wall means of said recess, wherein said boundary wall means includes an additional recess adjacent said enclosed side of said first named recess for receiving said frame member.

4,494,790

RAIN GUTTER ARRANGEMENT FOR AUTOMOTIVE VEHICLE

Yutaka Omura, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1982, Ser. No. 373,167
Claims priority, application Japan, May 8, 1981, 56-68964
Int. Cl.³ B60J 9/00
U.S. Cl. 296—154 **5 Claims**



1. In a vehicle:
a roof side rail fixed to said roof panel;
a front pillar;
a door having a sash, said sash juxtaposing said front pillar and said roof side rail when the door is closed;
a first weather strip fixed to one of said roof side rail and said front pillar or said door sash; and
a second essentially hollow tube-like weather strip fixed to one of said roof side rail and said front pillar of said door sash, outboard of said first weather strip, said second weather strip having an opening formed in a first portion thereof which extends along said roof side rail for allowing rain water from said roof panel to enter into the hollow of said first portion, and a second portion which extends along said front pillar, said second portion being arranged to close the opening defined between said sash and said front pillar in a manner to prevent noise from being generated by air flowing past said front pillar, said second portion being further arranged to drain the water entering said first portion through the hollow thereof toward the bottom of the door.

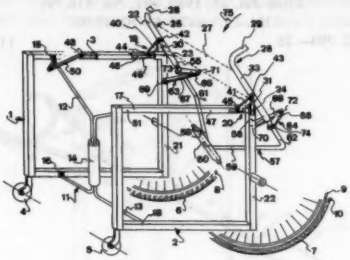
4,494,791

FOLDING WHEELCHAIR

Leo Jouk, 7, Avenue Ferrer, 93310 Le Pre Saint Gervais, France

Filed Jul. 27, 1981, Ser. No. 287,048
Claims priority, application France, Aug. 7, 1980, 80 17467; Jan. 16, 1981, 80 00709
Int. Cl.³ A47C 4/28
U.S. Cl. 297—45 **16 Claims**

1. In a chair including two lateral frames; a first cross-brace connecting said two frames, said first cross-brace being foldable, two staffs mounted rotatably respectively on each said frame, the improvement comprising a second cross-brace connecting said two staffs, said second cross-brace having two rigid parts swivable about a common axis; said first cross-brace being foldable into two rigid parts, each of said two rigid parts being mounted to swivel respectively on said two frames and being swivable about the same axis; second connection means between each part of the first cross-brace and each staff, both of which are rotatably connected to the same frame, said second connection means comprising, for each part and staff, a slidably mounted slide rod, the two ends of which are connected through rotation axes by a lever fixed to said staff and



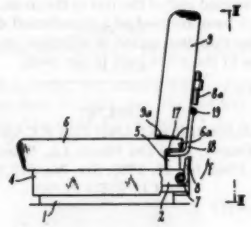
by a connecting rod mounted rotatably on said respective parts.

4,494,792

TRANSFORMABLE SEAT

Alexandre Quercy, Boulogne, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Jul. 27, 1981, Ser. No. 287,053
Claims priority, application France, Jul. 31, 1980, 80 16949
Int. Cl.³ A47C 13/00
U.S. Cl. 297—63 **10 Claims**



1. A transformable seat comprising a horizontal seat member and a seat back, wherein the seat back is connected to the support of the seat member by an articulation linkage comprising means for maintaining the lower portion of said seat back in permanent contact with the top of the rear portion of the seat member and the rear end of the latter during the pivoting movement of the seat back from an upstanding position to a position in which the top surface of the seat back is aligned with the top of the seat member, wherein rod means for maintaining the seat back comprises connecting rods fixed to the seat back, said rod means having a free end which is articulated below the seat back and below the rear portion of the seat itself in a position which is substantially in alignment with the projection of the median plane of said seat back.

4,494,793

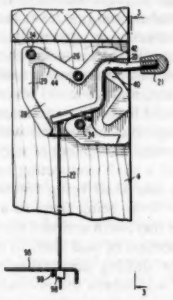
TRIGGER RELEASE MECHANISM FOR RECLINING CHAIR

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Filed Sep. 17, 1982, Ser. No. 419,156
Int. Cl.³ A47C 1/02
U.S. Cl. 297—85 **13 Claims**

1. In a reclining chair of the type including a footrest movable between retracted and extended positions, and actuating means for moving the footrest between said retracted and extended positions, the improvement comprising a trigger

projecting from one side of the chair, a connecting member connected to the trigger and extending generally vertically from the trigger to a lower level of the chair, an arm connected to the lower end portion of the connecting member and being operatively connected to said actuating means for controlling



the actuating means to move the footrest to said extended position, a case fixed to a frame portion of the chair, and means within the case mounting said trigger for pivotal movement, said case including a base having fixed thereon a fulcrum and wherein the trigger has a bite portion positioned about the fulcrum such that the trigger is movable about the fulcrum.

4,494,794

VEHICLE SEATS

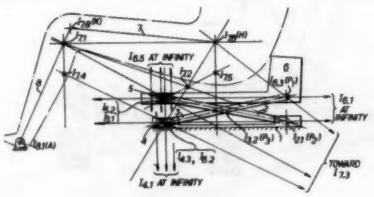
Geoffrey W. Barley, Kislingbury, England, assignor to UOP Inc., Des Plaines, Ill.

Filed May 16, 1979, Ser. No. 39,636

Claims priority, application United Kingdom, Mar. 12, 1979, 7908540

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—307 **11 Claims**



1. A suspended vehicle seat for providing isolation from vertical vibrations to an occupant thereof comprising a seat part, which includes a seat rest (**10**) which is mounted for tilting movement and a back rest (**11**), a base part (**1**), and means connecting the seat part to the base part, said means comprising a spring suspension by which the back rest is supported on the base part and which is effective to restrict movement of the back rest to a substantially vertical direction, the suspension including a spring and a plurality of relatively movable structural elements, certain of said elements connecting to the seat rest and to the back rest for providing pivotal movement of the seat rest about at least two spaced apart horizontal transverse axes through instantaneous centres of rotation, said centres being the instantaneous centres of rotation of the thigh (**7**) of a seat occupant for whom the seat is designed which is positioned on the seat rest relative to any two of said structural elements of the seat which move relative to each other during upward and downward movement of the seat part relative to the base part, said pivotal movement of the seat rest causing the thigh of a seat occupant to remain in contact with the seat rest and to be movable longitudinally and pivotally in such a way that the ankle hinge axis of the seat occupant will remain stationary relative to the base part as the seat moves above and below its mid-ride position in response to vertical vibrations.

4,494,795

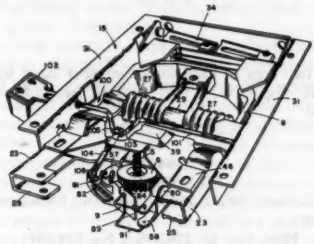
VARIABLE BACK ADJUSTER FOR CHAIRS

Charles P. Roossien, Wyoming; Brian Chambers, Byron Center, and Bruce Hiemstra, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 6, 1982, Ser. No. 375,550

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—355 **31 Claims**



1. In a chair having a tilting back which pivots relative to a mounting portion of said chair, the improvement of a variable back adjustment mechanism, comprising:

a first bracket to be mounted on said mounting portion;

a second bracket pivotally secured to said first bracket in overlying relationship thereto and to be operatively connected to said chair back;

a threaded spindle having one end thereof connected with one of said first and second brackets at a position on said one bracket spaced from said pivotal connection;

a gear wheel threadedly mounted on said spindle;

a gear wheel housing connected with the other of said first and second brackets spaced from said pivotal connection, and rotatably retaining said gear therein, whereby tilting said chair back pivots said two brackets and translates said spindle axially through said gear wheel, thereby rotating said gear wheel in said housing;

a pawl movably connected with said chair, and positioned to selectively engage said gear wheel to positively prevent rotation of said gear wheel with respect to said spindle;

means for shifting said pawl into and out of engagement with said gear wheel between locked and unlocked positions respectively, whereby said chair back can be locked in a plurality of different angular positions.

4,494,796

BUTTERFLY CHAIR CONSTRUCTION

Martin R. Liebhold, 12404 Rochedale La., Los Angeles, Calif. 90049

Filed Mar. 19, 1982, Ser. No. 359,812

Int. Cl.³ A47C *4/02*

U.S. Cl. 297—440 **10 Claims**

1. In a butterfly chair construction adapting the chair for rapid assembly, the combination comprising

(a) a framework that includes

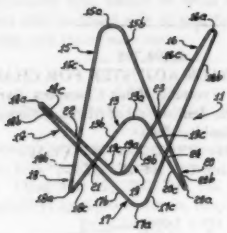
(i) four generally V-shaped upper members, each having two legs,

(ii) four generally V-shaped lower and substantially rigid members, each having two legs,

(iii) four cross pieces each having two rods defining four arms, the two rods interconnected in crossed relation, the two rods having axes which are non-intersecting,

(b) the two legs of each upper member sized to slidably

interfit, respectively, two arms of two different cross pieces, and



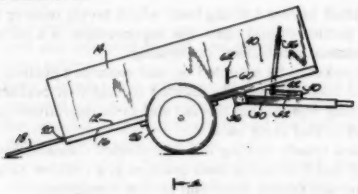
(c) the two legs of each lower member sized to slidably interfit, respectively, two arms of two different cross pieces.

4,494,797

TILT TRAILER

Victor V. Carberry, N55 W21404 Logan Dr., Menomonee Falls, Wis. 53051

Filed Aug. 10, 1983, Ser. No. 521,691
Int. Cl.[3] B60P *1/28*; B60D *1/14*
U.S. Cl. 298—5 **2 Claims**



1. A trailer adapted to be towed by a vehicle and adapted to support a machine, the trailer comprising:

a trailer bed adapted to support a machine, said trailer bed including a forward portion and a rearward portion,

a tailgate having an upper edge and a lower edge, said tailgate lower edge beng pivotally connected to said rearward portion of said trailer bed for swingable movement between a raised position wherein said tailgate lies in a vertical plane and a lowered position wherein said tailgate and said trailer bed are generally coplanar,

wheels supporting the trailer bed for movement along the ground, said wheels being located beneath a central portion of said trailer bed, said trailer bed being supported by said wheels for tipping movement between a first position wherein said trailer bed is generally horizontal and a machine loading position wherein said rearward portion of said trailer bed is adjacent the ground,

means for joining said trailer bed to a vehicle whereby said trailer can be towed by a vehicle, said means for joining said trailer bed to a vehicle including a draw member having opposite ends, a forward end adapted to be hitched to a vehicle and a rearward end, and means for pivotably joining said rearward end of said draw member to said trailer bed forward of said wheels such that said draw member can pivot with respect to said trailer bed about a horizontal axis substantially parallel to the axis of rotation of said wheels,

means for shifting said trailer bed from said horizontal position to said loading position, said means for shifting said trailer bed between said horizontal position and said loading position including a first lever having opposite ends, one of said ends of said first lever being pivotably connected to one of said trailer bed and said draw member for pivotal movement about a pivot axis which is fixed relative to said one of said trailer bed and said draw member, and means for slidably connecting the other of said opposite ends of said first lever to the other of said trailer bed and said draw member, said means for slideably connecting supporting said other of said opposite ends for slideably movement in the direction of the longitudinal axis of said draw member, said first lever member being pivotally moveable between a generally horizontal position wherein said trailer bed is in said horizontal position and an over-center position wherein said trailer bed is in said loading position, and a second lever pivotable about the pivot axis of said first lever and fixedly connected to said first lever for pivotal movement with said first lever and for causing pivotal movement of said first lever about said pivot axis, and a shaft connecting said first lever to said second lever, said shaft being rotatable about said pivot axis, said first lever being fixed to a first portion of said shaft to rotate therewith and said second lever being fixed to a second portion of said shaft to rotate therewith, and said means for shifting said trailer bed being positioned forwardly of said means for pivotably joining said rearward end of said draw member to said trailer bed,

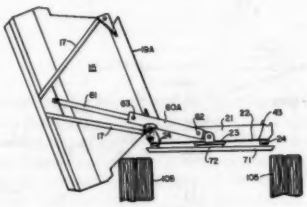
said tailgate and said trailer bed forming a generally planar inclined surface when said trailer bed is in said loading position and wherein a portion of said tailgate engages the ground and wherein said trailer bed and said tailgate form a planar inclined ramp having a slope whereby the machine can be driven onto the tailgate and trailer bed and up the inclined ramp to said forward portion of said trailer bed.

4,494,798

SIDE-DUMPING, MATERIAL-HAULING CONVEYANCE

Clarence W. Bailey, 2005 Huston St., Marysville, Calif. 95901

Continuation of Ser. No. 118,207, Feb. 4, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,823
Int. Cl.[3] B60P *1/16*
U.S. Cl. 298—17.6 **7 Claims**



1. In a material-hauling conveyance having a dual side-dumping capability,

a frameless material containing bed comprising a floor portion, a pair of continuous side wall portions with no gates therein, each meeting the respective edge of said floor portion at a break line and angling away from said floor portion to form a preselected angle to the vertical, and front and rear end wall portions;

conveyance means for transporting said bed, including a truck tractor and a dolly type trailer; said truck tractor including at least a pair of wheels and a truck frame mounted to said wheels and including a rearwardly extending stinger section; said dolly type trailer including at least a pair of wheels and further comprising a trailer frame mounted to said wheels and a reach and compensator assembly including a reach extending forward from said trailer frame and including a sliding pole compensator mounted therein with a front end of said compensator pivotally mounted to said stinger section of said truck frame;

a chassis assembly comprising a front bunk assembly, means mounting said front bunk assembly in a horizontally rotatable manner on said truck frame, a bolster assembly mounted on said trailer frame, a rear bunk assembly, and means mounting said rear bunk assembly is a horizontally rotatable manner on said bolster assembly; said bed having a pair of top hats, each mounted on the bottom of one of said end wall portions thereof; and said front and rear bunk assemblies each having a bottom hat shaped to engage in mating fashion with one of said top hats to mount said bed on said chassis assembly in a suspended manner;

a pair of hinge-mounting means located on opposite sides of said bed at the ends of each of said front and rear bunk assemblies for normally retaining said bed on said chassis assembly and selectably releasable for enabling said bed to be tilted selectively to one of said sides around a rotation axis; and

hoisting means mounted to said chassis assembly and said bed at the center line of said bed for raising said bed to tilt it on a selected one of said hinge-mounting means;

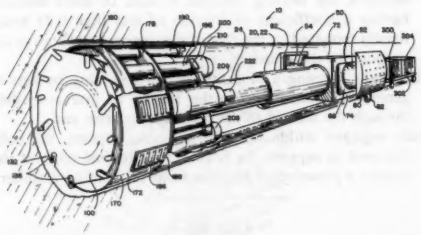
each of said hinge-mounting means being located with its rotation axis at a preselected location near an associated one of said break lines, and the width of said floor portion of said bed, the angle of said side wall portions of said bed, and the height of said rotation axis above the top of said wheels being together preselected in accordance with the overall width and depth of said bed, the anticipated center of gravity of said bed when loaded with material, and the weight of said conveyance means to enable said bed to be tilted by said hoisting means until said center of gravity passes over and beyond said rotation axis to a position such that one of said side wall portions is at an angle to the horizontal sufficient to completely dump said material from said bed without bumping into said wheels or turning over said conveyance means.

4,494,799

TUNNEL BORING MACHINE

Larry L. Snyder, Golden, Colo., assignor to Harrison Western Corporation, Lakewood, Colo.

Filed Feb. 17, 1983, Ser. No. 466,033
Int. Cl.³ E21C *25/16*; E21D *9/08*
U.S. Cl. 299—31 **39 Claims**



1. A tunnel boring machine for boring a tunnel having tunnel lining structure areas in portions of the tunnel associated with unstable ground and having unlined areas in portions of the tunnel associated with stable ground, the tunnel having a central longitudinal axis, and having generally circular tunnel cross sections perpendicular to the central longitudinal axis, the tunnel cross section having a pitch axis oriented generally perpendicular to the direction of gravitational force and intersecting the central longitudinal axis and having a yaw axis intersecting the central longitudinal axis and the pitch axis and perpendicular to both, the tunnel having an end face and a peripheral sidewall with lined and unlined portions; the tunnel boring machine comprising:

rotatable cutting wheel means positioned at the front end of the machine having a central axis of rotation adapted to be selectively located at a position substantially coaxial with an associated portion of the tunnel central longitudinal axis the cutting wheel being selectively engageable with the tunnel face for cutting material away from the tunnel face to elongate the tunnel in a forward direction;

rotation means operably associated with said rotatable cutting wheel means for selectively causing rotation thereof in a cutting state of operation and for selectively stopping rotation thereof in a noncutting state of operation;

extendable and retractable central thrust rod means having a central thrust rod longitudinal axis positioned in substantially coaxial relationship with said rotatable cutting wheel means axis of rotation for transmitting forward thrust to said cutting wheel means in a central thrusting state or a shield thrusting state of operation and for transmitting prying torque to said cutting wheel means in a prying state of operation;

central body means for supporting said central thrust rod means in extendable and retractable relationship therein;

central thrust generating means operably associated with said central body means for extending and retracting said central thrust rod means from said central body means;

extendable and retractable sidewall engaging means mounted on said central body means for selectively engaging opposite portions of the tunnel peripheral sidewall for preventing relative movement of said central body means with respect to the tunnel sidewall in a central thrusting state of operation and for selectively radially shifting said body means relative the tunnel longitudinal axis for transmitting prying torque to said cutting wheel means through said central thrust rod means in a prying state of operation;

central body support means for supporting said central body on the tunnel sidewall;

annular shield means operably mounted on said central thrust rod means for shielding a portion of the machine from collapsing tunnel sidewall material;

extendable and retractable shield thrust means operably associated with said shield means for coacting with the tunnel lining structure for selectively applying forward thrust to said cutting wheel means through said central thrust rod means during a shield thrusting state of operation;

muck removal means for removing material cut by said cutting wheel means at the tunnel face to a rearward position within the tunnel; and

control means for selectively operating various machine components.

4,494,800

INTERLOCK BRAKING SYSTEM FOR MOTORCYCLES

Tsutomu Hayashi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,408
Claims priority, application Japan, May 13, 1981, 56-72071
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—6 A **7 Claims**

1. An interlock braking system for motorcycles, comprising:

a brake pedal;

a single master cylinder operably connected with said brake pedal;

first and second brake means connected to said master cylinder for applying first and second braking forces to a front wheel and a rear wheel, respectively, according to braking pressures corresponding to an external force applied to said brake pedal;

a pressure circuit connecting said master cylinder with said first and second brake means;

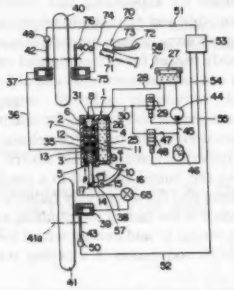
a braking force distribution mechanism for changing said first and second braking forces of said first and second brake means at a predetermined ratio set therebetween;

anti-lock means, operably connected with said first and second brake means, for changing said first and second

braking forces of said first and second brake means according to the rotational speeds of said front and rear wheels to prevent said wheels from becoming locked;

said master cylinder including a first piston member operably connected to said brake pedal, a first cylinder accommodating said first piston member therein, a second piston member operably connected to said brake pedal, a second cylinder accommodating said second piston member therein, a first oil chamber defined by said first piston member and said first cylinder for generating said braking pressures, and a second iol chamber defined by said second piston member and said second cylinder;

said anti-lock means being provided with a control mechanism for changing said braking forces according to said rotational speeds of said front and rear wheels;



said control mechanism including a first relatively low pressure source, a second relatively high pressure source, a normally open valve disposed between said first oil chamber and said first pressure source, and a normally closed valve disposed between said second oil chamber and said second pressure source;

said control mechanism closing and opening said normally open valve and said normally closed valve according to said rotational speeds of said front and rear wheels, whereby locking of said wheels is prevented; and

said braking force distribution mechanism being set at a predetermined proportion in which said first braking force applied to said front wheel is greater than said second braking force applied to said rear wheel.

4,494,801

ANTILOCK BRAKE SYSTEM WITH SEPARATE FRONT- AND REAR-WHEEL SAFETY MEANS

Taiji Ohmori, Kawagoe; Makoto Sato, Kamifukuoka, and Yoshikazu Tsuchiya, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,954

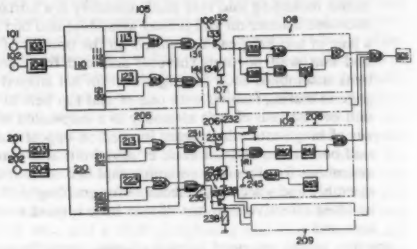
Claims priority, application Japan, Mar. 8, 1982, 57-36113; Mar. 8, 1982, 57-36114

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—92 **3 Claims**

1. An antilock brake system with separate front- and rear-wheel safety means, comprising:

a brake force applying system for applying a brake force to front and rear wheels; front-wheel antilock control means for suppressing the brake force applied to said front wheel when the brake force to said front wheel is excessively strong; rear-wheel antilock control means for suppressing the brake force applied to said rear wheel when the brake force to said rear wheel is excessively strong; front-wheel safety means for detecting a malfunction, when said front-wheel antilock control means is malfunctioning in its brake force suppressing state, to instantly block the supply of power to said front-wheel antilock control means; and rear-wheel safety means for suppressing the brake force to said rear wheel each time the brake force to said rear wheel is excessively strong, when said rear-wheel antilock



control means has a malfunction and has lost its brake force suppressing function.

4,494,802

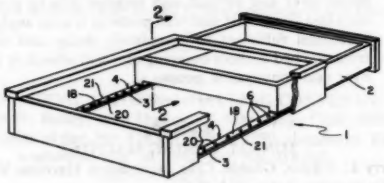
SLIDE ARRANGEMENT

Richard L. Henson, 1200 N. Everette, Glendale, Calif. 91207

Filed Apr. 25, 1983, Ser. No. 488,031

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—3.8 **22 Claims**



1. A slide arrangement that rests upon a support for a drawer or the like comprising:

an elongated bearing member having a pair of opposed surfaces, the bearing member formed of sheet material having a coefficient of friction of less than 0.25 being fixedly mounted by the first of the opposed surfaces to the support for the drawer;

first walls forming a plurality of ball receiving sockets in general alignment along the length of and accessible through the second of the opposed surfaces; and

balls engaged within the ball receiving sockets, the balls disposed to support the bottom longitudinal edge of the drawer a preselected distance from the bearing member.

4,494,803

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jun. 28, 1983, Ser. No. 509,230

Claims priority, application Austria, Jul. 7, 1982, 2627/82

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—3.8 **2 Claims**

1. A pull-out guide assembly for use on each of opposite sides of a drawer or the like in an article of furniture of the type wherein the drawer or the like is slidably insertable into and removable from a furniture body, said assembly comprising:

a pull-out rail to be fastened at a side of the drawer;

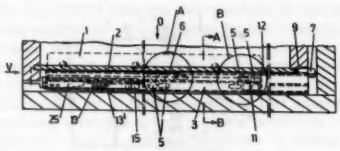
a supporting rail to be fastened at a side of the body;

an intermediate carriage arranged between said rails and supporting load-transmitting disk or cylindrical shaped rollers;

said rails having respective running flanges having ends with inclined portions for drawing the drawer into the body;

said pull-out rail having a portion of rectangular cross-section receiving said carriage, said portion of rectangular cross-section being defined by two horizontal flanges and two vertical flanges, approximately half of said portion of rectangular cross-section being open at a side thereof directed toward a side wall of the body;

said supporting rail having a portion with a Z-shaped profile extending into said pull-out rail and into said carriage, said portion having said Z-shaped profile including a horizontal flange defining said running flange of said supporting rail and inner and outer vertical flanges extending from respective opposite ends of said horizontal flange thereof;



said rollers including first rollers having vertical axes of rotation and arranged above said horizontal flange of said supporting rail and running between said outer vertical flange of said supporting rail and a first said vertical flange of said pull-out rail;

said rollers further including second rollers having vertical axes of rotation and arranged below said horizontal flange of said supporting rail and running between said inner vertical flange of said supporting rail and a second said vertical flange of said pull-out rail; and

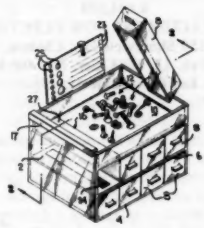
said carriage having a groove with a vertical depth for receiving said outer vertical flange of said supporting rail.

4,494,804

STORAGE CABINET WITH PARTS SORTER

Lonnie O'Keeffe, P.O. Box 26194, El Paso, Tex. 79926

Filed Oct. 27, 1981, Ser. No. 315,412
Int. Cl.³ B65D *91/00*; B65B *67/02*
U.S. Cl. 312—211 **8 Claims**



1. Apparatus for facilitating inspection of a plurality of objects, and the subsequent placement of objects in a drawer consisting of:

a tray having a peripheral upstanding rim and a bottom for receiving said plurality of objects,

said bottom having a hole therein,

means for supporting a drawer beneath said hole, and

cover means for covering said hole,

said cover means being removable so that said hole may be uncovered,

said cover means having an edge with a straight portion, whereby said cover means may act as a scraper for pushing said objects through said hole,

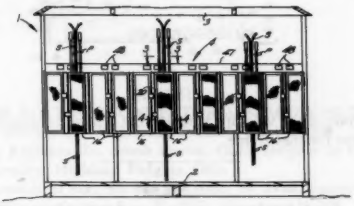
whereby said objects may be placed in said drawer by allowing them to fall through said hole.

4,494,805

EQUIPMENT LOCKER

Philip J. Washburn, Roseburg, Oreg., assignor to Glen E. Beymer, Creswell, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,357
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—215 **4 Claims**



1. A locker for the orderly storage of ski equipment, said locker comprising,

upper and lower members each having a horizontally extending open ended recess therein,

side walls and a back wall extending intermediate said members,

a door normally closing the open end of each recess and confining the stored articles therein to an upright position, said door additionally closing a storage area defined by said members and said side and back walls,

a door jamb of tubular construction,

a door locking mechanism within said door jamb, said locking mechanism including a solenoid having an armature, a door latch actuated by said armature, an electrical circuit serving said solenoid, a self-interrupting switch in said circuit causing the solenoid to be energized in an intermittent manner to impart impact loads to the latch to assure latch movement in the presence of loads on the door latch, a door actuated switch in said circuit and actuated to a closed position upon closing of the door, and

a computer and a computer actuated switch closed by the computer at the expiration of a timed interval of locker use to close said electrical circuit and energize said solenoid and said self-interrupting switch.

4,494,806

SPRING LOADED DRAWER ASSEMBLY WITH MECHANICAL DAMPING

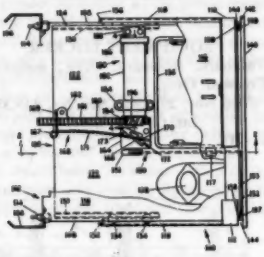
V. Harold Williams, Rockford, and David L. Tomsu, Grand Rapids, both of Mich., assignors to Leslie Metal Arts Company, Grand Rapids, Mich.

Filed May 13, 1983, Ser. No. 494,414
Int. Cl.³ A47B *21/04*
U.S. Cl. 312—333 **16 Claims**

1. In a drawer assembly comprising a stationary retainer frame, a drawer, means for slidably mounting the drawer to the retainer frame so as to allow the drawer to move between a closed, retracted position and an open, extended position, means for releasably maintaining the drawer in the closed position, and mechanical force means mounted to the frame for exerting mechanical forces on the drawer relative to the frame so as to extend the drawer from the closed position, the improvement which comprises:

damping means mounted to the frame, coupled to the mechanical force means, and comprising a hollow fluid-filled chamber bounded by surfaces with a high viscosity fluid in the chamber, wherein shear stress forces are exerted by

the fluid on at least one surface of the chamber for opposing the exerted mechanical forces and damping the magnitude of the velocity at which the drawer is extended from the retainer frame.



4,494,807

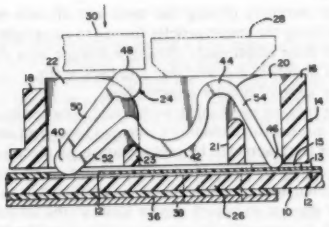
LOW PROFILE CHIP CARRIER CONTACT

Nicola Cosmo, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1982, Ser. No. 453,328

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 CF **19 Claims**



1. A device for connecting a leadless integrated circuit chip carrier or package to a circuit board, comprising:

a circuit board having electrical conductors contained thereon;

chip carrier housing means disposed on said circuit board for receivably receiving a leadless integrated circuit chip carrier, said carrier housing means having on each side thereof a plurality of slots for receivably receiving contact means;

contact means disposed in said slots for providing electrical communication between a leadless integrated circuit chip carrier and said electrical conductors contained on said circuit board, said contacts having a first portion resembling an S which has been placed on its side having a second portion resembling a superimposed beam portion on one of the outermost curves, said beam portion having a contact area at each of its ends, with said beam ends being in engagement with opposed, inwardly facing, substantially planar surfaces of said circuit chip carrier and said circuit board, thereby providing electrical communication between a leadless integrated circuit chip carrier and said electrical conductors contained on said circuit board;

first bracket means disposed on said carrier housing means for retaining said contact means in said carrier means;

a leadless integrated circuit chip carrier disposed on said carrier housing means; and

second bracket means disposed on the top of said leadless integrated circuit chip carrier for maintaining said leadless integrated circuit chip carrier in electrical communication with said contact means.

4,494,808

ELECTRICAL COLLECTOR RAIL WITH CONNECTABLE ADAPTER

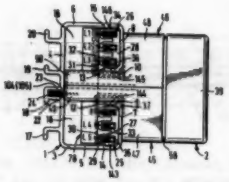
Harald Widell, Kalendervägen 25; Jan Widell, Augustivägen 11, and Nils-Ake Bergman, Junivägen 24, all of S-352 47 Växjö, Sweden

Filed Dec. 10, 1982, Ser. No. 448,803

Claims priority, application Sweden, Dec. 17, 1981, 8107582; Fed. Rep. of Germany, Mar. 29, 1982, 8208908[U]

Int. Cl.³ H01R *9/00*

U.S. Cl. 339—21 R **13 Claims**



1. An electrical collector rail with a connectable adapter comprising

a rail which is substantially C-shaped in cross-section and has a rear wall, two side walls and a front wall wherein an opening is located;

a number of conductors situated, at least partially, behind said front wall;

an adapter having an insertion part for insertion into said opening;

a contact beam attached to said adapter adjacent said insertion part;

plugs mounted on said contact beam; and

screw means extending through said adapter, accessible at a side of the adapter remote from the rail and operable to pivot said contact beam within said rail and move said beam forward until said plugs contact said conductors and backwards until said plugs are out of contact with said conductors.

4,494,809

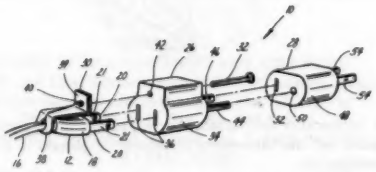
SECURITY ATTACHMENT FOR ELECTRICAL PLUG

Leonard Soloman, 156 Shoreview Dr., Chelsea, Mich. 48118

Filed Feb. 15, 1983, Ser. No. 466,406

Int. Cl.³ H01R *13/621*

U.S. Cl. 339—75 P **18 Claims**



1. As an authorized use permitter and unauthorized use preventer for connection between an electrical receptacle having plural terminals of a given construction and pattern and an electrical plug having plural terminals of a construction and pattern which allow the plug and receptacle to be plugged together to establish electric circuit continuity between the terminals of the plug and those of the receptacle, a security attachment comprising first and second adapters, each adapter

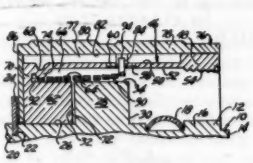
comprising its own non-conducting body and a pair of electrical conductors therein terminating at respective ends thereof in respective first and second sets of terminals, said first set of terminals of said first adapter comprising plural terminals constructed and arranged to allow the plug and said first adapter to be plugged together to establish electric circuit continuity between the terminals of the plug and said conductors of said first adapter, said first set of terminals of said second adapter comprising plural terminals constructed and arranged to allow the receptacle and said second adapter to be plugged together to establish electric circuit continuity between the terminals of the receptacle and said conductors of said second adapter, said two adapters having their second sets of terminals constructed and arranged for mutual engagement to establish electric circuit continuity between their respective electrical conductors so that electric circuit continuity will thereby be established between the terminals of the plug and those of the receptacle via said two adapters when the latter are associated with their second sets of terminals in mutual engagement and with their first sets of terminals respectively plugged together with the plug and the receptacle respectively, said second set of terminals of said first adapter being constructed and arranged to preclude the possibility of establishing electric circuit continuity with the terminals of the receptacle if an attempt is made to plug together said second set of terminals of said first adapter and those of the receptacle, and means providing for connection of said first adapter with the plug to prevent the two from becoming unplugged after they have been plugged together.

4,494,810

ANTI-DECOUPLING DEVICE FOR AN ELECTRICAL CONNECTOR

Alan L. Schildkraut, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 11, 1983, Ser. No. 493,487
Int. Cl.³ H01R *13/623*
U.S. Cl. 339—89 M **9 Claims**



1. An anti-decoupling mechanism for a separable electrical connector assembly, the electrical connector assembly comprising a pair of generally cylindrical connector members adapted for mating engagement along their primary axis and a coupling nut rotatably mounted to one of said connector members for coupling the connector members together, said one connector member including an annular flange and said coupling nut comprising a generally cylindrical coupling sleeve adapted to connect to the other connector member upon coupling rotation of the coupling nut in one direction and a radial flange having a forwardly facing end wall abutting the annular flange for rotation thereabout, said coupling rotation of the coupling nut drawing the flanges tightly against one another, the anti-decoupling mechanism restraining said coupling nut against unwanted uncoupling rotation in the other direction and characterized by:

coil means connected to the coupling nut for coiling about said coupling nut and said one connector member as a result of the coupling nut rotating from a first position to a second position, said coil means being uncoiled relative to said one connector member when in the first position whereby the coupling nut is not restrained from rotating relative to either of the connector members and tightly coiled relative to said coupling nut and said one connector member when in the second position whereby friction forces developed between the tightly coiled relation and the tightly abutted flanges restrain the coupling nut from rotating relative to the other connector member; and

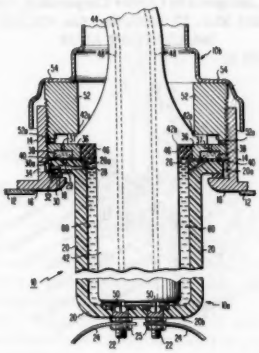
means for driving the coupling nut in either of said directions.

4,494,811

HIGH VOLTAGE CONNECTOR ASSEMBLY WITH INTERNAL OIL EXPANSION CHAMBER

Anthony Palermo, Jr., South Euclid, Ohio, assignor to Picker Corporation, Highland Heights, Ohio

Continuation of Ser. No. 215,003, Dec. 10, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,702
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 R **5 Claims**



1. A high voltage connector assembly comprising a female connector and a male connector, said female connector comprising:

a generally cylindrical support member having an inwardly extending lip;

a generally cylindrical container closed at one end and having an outwardly extending flange at the opposite end, at least one part of said container being located within said support member, at least part of said lip and flange being coextensive;

an annulus positioned in said member for urging said flange and lip toward one another, said annulus having a hollowed out annular cavity on one planar surface thereof, said one planar surface and cavity being covered by an elastomeric material, said elastomeric material being held in place between said planar surface and said flange;

said male connector comprising:

a generally cylindrical member of diameter smaller than and adopted for insertion in said female generally cylindrical container such that there is a gap between said male and female cylindrical members which extends to said elastomeric material, means to engage said support member for creating a liquid-tight seal between said male and female connectors; and

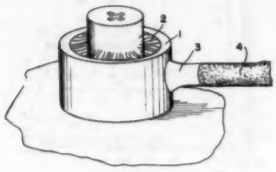
a liquid dielectric in said gap which when expanded depresses said elastomeric material into said cavity.

4,494,812

WIRE BRUSH BATTERY CONNECTOR

John D. Bolton, 5 Shiloh Cir., Irvine, Calif. 92714

Filed Mar. 14, 1983, Ser. No. 444,425
Int. Cl.³ H01R *4/26, 11/28*
U.S. Cl. 339—95 B **3 Claims**



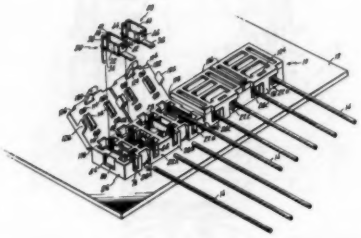
1. An apparatus for connecting a wire to a power source or load post comprising a wire electrically connected to a metal ring, with a plurality of metal wires projecting from the internal surface of said ring.

4,494,813

ELECTRIC CONNECTOR ASSEMBLY

Eugene E. Daley, Jr., and Thomas R. O'Grady, both of Fort Wayne, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,170
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—99 R **4 Claims**



1. An electric connector assembly for connecting two insulated wires to be conductors on a printed circuit board which comprises:

a conductive sheet metal contact member for each wire comprising a flat base portion, a wire terminating portion, and a terminal lug portion extending perpendicularly from said base portion on one side thereof for insertion into a printed circuit board; said wire terminating portion including a pair of contact plates supported on the other side of said base portion in spaced opposed relation; each contact plate having a wire-receiving slot opening into an edge thereof facing away from said base portion and aligned with the slot of the other contact plate whereby upon movement of an insulated wire laterally of its axis into said aligned slots, the edges of said slots pierce the insulation of the wire to establish electrical contact with the wire;

an open top hollow housing block of resilient insulation material comprising a flat base, front and rear walls, first and second side wall, and divider wall means extending between said front and rear walls to define two longitudinally extending parallel chambers each receiving a respective contact member with its contact plates facing said front and real walls respectively; said base having bores therein through which said terminal lug portions extend beyond the bottom surface of said base; said front and rear walls each having a pair of notches opening into an edge thereof facing away from said base in alignment with the respective slots of said contact plates for receiving the wires to be connected; said divider wall means including a longitudinally extending rail supported at its ends in spaced relation to said base by a pair of abutment walls formed integrally on said base at opposite sides of an opening through said base; a flexible arm integral at one end with said rail and having a free end laterally deflectable and projecting through said opening below the bottom surface of said base; said arm having a locking extension projecting laterally outwardly and adapted for insertion through a hole in a printed circuit board and into retaining engagement with the underside of the printed circuit board when said base is brought into contacting relation with the printed circuit board;

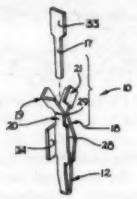
and a cover hinge on said rear wall to fold over and extend across said base in its closed position; said cover having integral pusher members for forcing wires into said slots of the contact plates when said cover is moved to its closed position; said cover and said front wall being complementarily formed with means for latching said cover in its closed position.

4,494,814

HEAT DISSIPATING LEAD CONNECTOR FOR SEMICONDUCTOR PACKAGES

Terrell A. Oyama, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 16, 1982, Ser. No. 408,147
Int. Cl.³ H01R *13/05*
U.S. Cl. 339—112 R **9 Claims**



1. A heat dissipating connector for coupling a semiconductor package lead to a printed circuit board or the like, comprising:

a conductive strip of metal having a substantially U-shaped bend transverse to the longitudinal axis of said strip thereby forming a centrally disposed bore for receiving and retaining said lead, and having a pair of oppositely facing fingers providing an inward spring force for compressing said lead between said fingers, and for retaining said connector in a receiving hole, each finger of said pair of opposite facing fingers having a free end, each free end being bent outwardly such that said free ends diverge; and

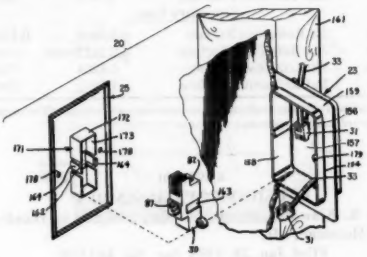
an integral fin extending outwardly from said conductive strip along the central portion of the longitudinal edge of at least one of said fingers,

whereby heat generated by an integrated circuit within a semiconductor package transferred to said lead is dissipated by said connector thru said fin.

4,494,815
SELF-ALIGNING COVER FOR MODULAR TRICOUPLER

Melvin W. Brzostek, Bel Air; Edwin C. Hardesty, Perry Hall, and Erle M. Hutchins, Bel Air, all of Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 19, 1982, Ser. No. 442,930
Int. Cl.³ H01R *13/60*
U.S. Cl. 339—123 12 Claims



1. A device for modular wiring systems, said device comprising:

a tricoupler which includes:

a housing which is made of a dielectric material, said housing including first, second and third modular plug-receiving cavities and a groove in each of two opposite sides thereof; and

a wire-like contact element which is made of a relatively resilient metallic material and which is mounted in said housing, said wire-like contact element including one end portion which extends into said second cavity, another end portion which extends into said third cavity, and a loop which extends from the vicinity of said third cavity, through said first cavity toward said second cavity, and which is controlled to deflect sufficiently without permanent deformation to develop suitable contact pressure when engaged by a terminal of a modular plug that is inserted into said first cavity; and

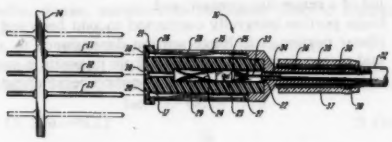
a cover which includes means for securing said tricoupler thereto, an opening which is aligned with said third cavity when said tricoupler is secured to said cover, and a pair of latching tabs depending therefrom with each said tab adapted to be received in one of said grooves of said housing, said cover also including alignment means for causing said opening to be aligned with said third cavity as said tricoupler is being secured to said cover, said alignment means including a perimetral fence which depends from said cover and which includes two end portions and two side portions with each side portion including two segments spaced from each other with one of said latching tabs disposed therebetween.

4,494,816
COAXIAL CABLE CONNECTOR

Peter J. Tamburro, Hanover Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 27, 1983, Ser. No. 517,635
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R 7 Claims

1. A coaxial cable connector comprising an insulative plug having a first electrical terminal pin receiving aperture at one end opening on an inner cavity in said plug an opening on the other end, and a second electrical terminal pin receiving aperture at said one end opening on a slot formed in a surface of said plug, an electrical contact fitted in said cavity, said contact presenting electrical terminal pin contacting means at one end facing said first aperture and electrical conductor contacting means at the other end facing said other end of said plug, and a conductive housing fitted about said plug, said housing being formed to present an electrical contact surface extending into



said slot, said housing terminating in a hollow stem dimensioned within to receive the inner insulation of a coaxial cable and without to receive about it the shielding of a coaxial cable.

4,494,817
FEEDER CONNECTOR ASSEMBLY FOR COAXIAL CABLE

Chi-Hao Huang, No. 4, Kuo Sheng Li, Chang Hua, Taiwan (500)

Continuation-in-part of Ser. No. 357,797, Mar. 12, 1982,. This application Aug. 12, 1983, Ser. No. 522,578
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R 2 Claims

1. A feeder connector comprising:

a base plate;

a hollow safety sleeve having a threaded portion integrally formed on one end thereof, said plate being positioned within said safety sleeve;

a plug piece fitted on the other end of said safety sleeve;

a twin lead feeder passing through said plug piece such that a portion thereof is positioned within said safety sleeve, the portion of said twin lead feeder within said safety sleeve being fixed to said base plate;

clip means fixed to said base plate, said clip means including wedge clip guide pieces;

a body means, said wedge clip guide pieces engaging said body means; and

a hook shaped leaf spring means fixed to said base plate, said leaf spring means being pressed against the inside wall of said safety sleeve

4,494,818
MOUNTING MEMBER FOR ELECTRICAL CONTACTS

Carl C. Petersen, Binghamton; Stephen A. McKeown, Unadilla, and Richard W. Normann, Otego, all of N.Y., assignors to Allied Corporation, Southfield, Mich.

Filed Sep. 6, 1983, Ser. No. 529,419
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—192 R 6 Claims

1. A mounting member for electrical contacts each having a forward mating portion and a rearwardly extending bendable conductor, said mounting member comprised of a plastic one piece molded unitary member characterized by:

a base having a forward end, a rear end and a plurality of passages extending between said forward end and said rear end, each of said passages adapted to receive a respective contact with the bendable conductor of each contact extending from the rear end of said base;

a planar portion extending parallel to the rear end of said base, said planar portion including a plurality of apertures each adapted to receive the rearwardly extending conductor of a respective contact; and

a hinge portion integrally connected to said base and said planar portion, said hinge portion dimensioned to allow said planar portion to be moved from its position parallel to the rear end of said base to a position perpendicular to

the rear end of said base whereby, when said contacts are mounted in the passages in said base with their respective conductors extending through the apertures in the planar portion of said mounting member and said planar portion is moved 90 degrees, the conductor of each contact is deformed by such motion of the planar portion from a substantially straight shape into one in which it is bent 90 degrees.

4,494,819

TELESCOPE OBJECTIVE SYSTEM FOR THE INFRARED RANGE

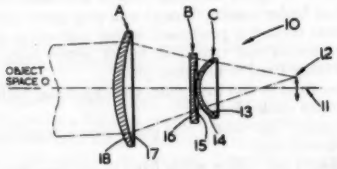
Michael O. Lidwell, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Continuation of Ser. No. 234,439, Feb. 13, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 566,699

Claims priority, application United Kingdom, Mar. 5, 1980, 8007406

Int. Cl.³ G02B *13/14*

U.S. Cl. 350—1.4 **3 Claims**



1. A telescope objective system formed by a primary lens having a single lens element aligned on a common optical axis with a secondary lens having two lens elements forming a doublet, the shape and power distribution of the lens elements being such as to compensate for monochromatic aberration of the system, each lens element being made of a material which has a useful spectral bandpass in the infrared wavelength region and the lens elements of the secondary lens having refractive surfaces intercepting said optical axis which are substantially spherical, the system having a planar image surface, a postively-powered primary lens and a negatively-powered secondary lens whereby to provide an effective focal length greater than the axial distance between the image surface and the distal refractive surface, said distal refractive surface being formed by said primary lens element which is made of germanium, at least one of the two lens elements of the secondary lens being made of a chalcogenide glass such that the system is achromatic in the infrared wavelength region, wherein both lens elements of the secondary lens are made of chalcogenide glass having a refractive index of about 2.4916 and a dispersion coefficient of 0.00660, the radius of curvature of the respective refractive surfaces and the separations between successive refractive surfaces as listed from said distal refractive surface, in normalised units, being as follows:

ITEM		Radius	Separation
	Primary Lens		
	1st Refractive Surface	0.5926	—
	2nd Refractive Surface	0.7692	.0427
	Secondary Lens		
1st lens	1st Refractive Surface	−3.2968	0.3948
element	2nd Refractive Surface	0.3825	.0160
2nd lens	1st Refractive Surface	0.6204	.0267
element	2nd Refractive Surface	−1.5895	.0267

positive radius of curvature indicating a centre of curvature lying on the image plane side of the refractive surface and vice versa.

4,494,820

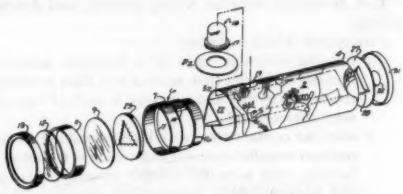
KALEIDOSCOPE ASSEMBLY

Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.

Filed Jan. 28, 1983, Ser. No. 462,058

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—4.1 **7 Claims**



1. A kaleidoscope comprising a hand supportable and operable housing having a first end and a second end; a sleeve rotatably disposed within said housing adjacent said first end, with the axis of rotation longitudinally extending toward said second end, said sleeve defining a transparent object enclosure therewithin; a plurality of pattern producing objects within said enclosure; an end wall having a view opening, said end wall being disposed adjacent said second end of said housing; reflecting means disposed within said housing to extend between said view opening and said transparent object enclosure to define a varying composite image at said view opening when said sleeve and said transparent enclosure therein are rotated; support means within said housing to support said reflecting means; and rotatable manual actuating means projecting through said housing intermediate said first and second ends in spaced relation from said ends with its axis of rotation extending normally to the axis of rotation of said sleeve and geared to said sleeve to rotate said sleeve and said transparent object enclosure therewithin to produce said varying composite image at said viewing end by tumbling said pattern producing objects within said enclosure.

4,494,821

LASER PRINTING SYSTEM WITH DEVELOPABLE HELICOID REFLECTOR

John R. Lewis, Stow; Andrew McCurdy, Danvers, and Arthur D. Gaudet, Waltham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

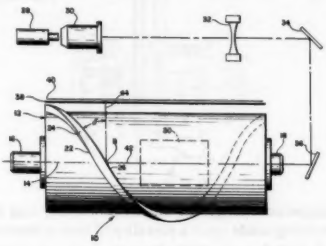
Filed Mar. 7, 1983, Ser. No. 472,733

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.5 **16 Claims**

1. Line scanning apparatus for use with a source of radiation that can be beamed thereat, to scan the beamed radiation across a radiation sensitive medium in a plurality of successive line scans, said apparatus comprising:

a specularly reflective developable helicoid disposed for rotation about the longitudinal center axis thereof to receive an incident beam of radiation from the source in a direction generally parallel to said longitudinal center axis and reflect the incident beam of radiation in a direction outward of said longitudinal center axis toward the radiation sensitive medium wherein one rotation of said helicoid operates to displace the reflected beam of radiation in one direction parallel to said longitudinal center axis; and



means for optically controlling said reflected radiation from said helicoid so as to limit the divergence of the reflected radiation in directions generally perpendicular to the longitudinal center axis of said helicoid.

4,494,822

OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION SYSTEMS

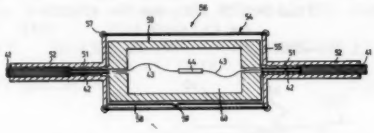
Peter Harvey, London, England, assignor to BICC Public Limited Company, London, England

Filed Jun. 18, 1982, Ser. No. 389,682

Claims priority, application United Kingdom, Jun. 18, 1981, 8118737

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.21 **43 Claims**



16. In an overhead electric transmission system of the kind in which at least one overhead electric conductor comprises a substantially circumferentially rigid central core having an elongate compartment within and extending throughout the length of the core, at least one optical fibre loosely housed in the elongate compartment and, surrounding the central core, at least one layer of helically wound bare elongate elements of metal or metal alloy, a joint between two overhead electric conductors, or between an overhead electric conductor and a cable extending to a spaced location, wherein the joint between the optical fibres of the overhead electric conductors, or of the overhead electric conductor and the cable, is enclosed within a substantially fluid-tight elongate housing of metal or metal alloy having protruding from each or one of its ends a sleeve of metal or metal alloy of high electrical conductivity through which at least a part of one of the overhead electric conductors, or of the overhead electric conductor, extends and which is compression jointed to said overhead electric conductor to provide a mechanical and electrical connection between the metal housing and said overhead electric conductor.

4,494,823

OPTICAL CONNECTOR SYSTEM

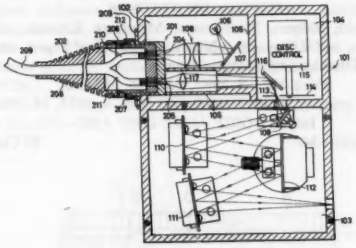
Kenichi Yoshida; Kimizo Ono, and Tomio Iwamoto, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 6, 1982, Ser. No. 447,362

Claims priority, application Japan, Dec. 9, 1981, 56-182156[U]; Mar. 8, 1982, 57-37017; Sep. 17, 1982, 57-140979[U]

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.22 **13 Claims**



9. An optical connector comprising: a pair of housings; one of the housings containing a plurality of light-receiving and light-transmitting elements in a fixed condition, the other housing containing a plurality of optical fiber bundles in a fixed condition, said optical fiber bundles in said other housing being provided to face the light-receiving and light-transmitting elements in said one housing, wherein at least one pair of optical fiber bundles can be connected to said light-receiving and light-transmitting elements simultaneously when said housings are in an opposed relationship; wherein one of the fiber bundles comprises a light-transmitting bundle and another of said fiber bundles comprises a light-receiving bundle; and wherein one of said housings comprises a female member, and the other housing a male member, means to lock the members together, said female member having a light-transmitting window and a light-receiving window, said light-transmitting and light-receiving windows configured so that, when the male member comes into engagement, the light-transmitting window faces the end surface of the light-transmitting fiber bundle, and the light-receiving window faces the end surface of the light-receiving fiber bundle.

4,494,824

LIQUID CRYSTAL DISPLAY WITH SMALL IMPEDANCE ORIENTING FILM

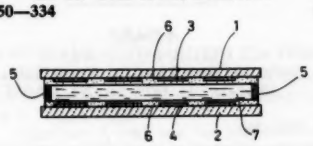
Takeshi Nakamura, Yamatokoriyama; Seiji Okamoto, Osaka, and Kazuyoshi Hirayama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1982, Ser. No. 450,775

Claims priority, application Japan, Dec. 18, 1981, 56-189671[U]

Int. Cl.³ G02F *1/133*; C09K *3/34*

U.S. Cl. 350—334 **6 Claims**



1. A liquid crystal display device comprising a pair of opposed substrates, a transparent electrode provided on at least

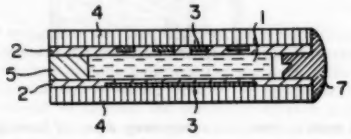
one of the substrates, a liquid crystal composition sandwiched between the substrates, an orienting film of an organic high copolymer resin formed at least over the surface of the electrode which is on the substrate and is to be in contact with the liquid crystal composition, and conductive particles mixed within the orienting film to reduce the resistance of the orienting film.

4,494,825

FILL PORT SEAL WITH FIRST AND SECOND PHOTOSENSITIZERS

Ken Sasaki; Shigeru Matsuyama; Masaharu Koyama, all of Mobara, and Kazuyoshi Ichihara, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,183
Claims priority, application Japan, Mar. 4, 1981, 56-29864
Int. Cl.³ G02F *1/133;* C08F *8/00*
U.S. Cl. 350—343 **10 Claims**



1. A liquid crystal display device comprising a pair of substrates which are placed in parallel and at least one of which is transparent, the peripheries of said substrates being sealed by a sealant to form an inner cavity with a fill port, said inner cavity being filled with a liquid crystal composition, the inner surfaces of said substrates facing each other having electrodes and orientation controlling films thereon, and said fill port being sealed by using a photo-setting resin composition comprising an acrylic or methacrylic type resin as a major resin component and two or more photosensitizers different in quality, wherein the photosensitizers different in quality are comprised of at least one first photosensitizer which can reduce the curing time of the resin composition greatly and at least one second photosensitizer which can reduce the curing time of the resin composition not so greatly as the first photosensitizer, and wherein the at least one first photosensitizer is selected from the group consisting of β-naphthalene sulfochloride, 1-butylnaphthalene-sulfonic acid-2-chloride, 1,4-dibutylnaphthalene sulfonic acid-2-chloride, p,p-ditolyl disulfide, β,β-dinaphthalene disulfide, decyl chloride, benzoin methyl ether, benzoin ethyl ether, benzoin isopropyl ether, benzoin n-butyl ether, benzoin sec-butyl ether, benzoin isobutyl ether, di-tert-butyl peroxide, 2-methylanthraquinone, 1,5-dinitroanthraquinone, and anthraquinone, and the at least one second photosensitizer is selected from the group consisting of benzene-sulfochloride, diphenyl disulfide, tetramethylthiuram disulfide, bis(2-benzthiazyl) disulfide, dibenzyl ketone, Michler's ketone, phenyl acetone, benzophenone, 4-methoxy benzophenone, acetophenone, acetylacetone, benzoin phenyl acetate, benzoin tert-butyl ether, furoin, furoin methyl ether and tert-butyl perbenzoate.

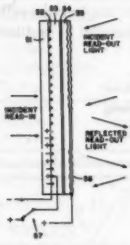
4,494,826

SURFACE DEFORMATION IMAGE DEVICE

James L. Smith, 426 High School Dr., Grand Prairie, Tex. 75050

Filed Dec. 31, 1979, Ser. No. 108,933
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—360 **4 Claims**

1. A surface deformation image device comprising a plurality of laminated layers; a first layer being a transparent supporting substrate; a second layer being a grille structure layer; a third layer being photoconducting layer in electrical contact with said grille structure layer; a fourth layer being an elastomer layer; a thin metal film coating layer on said elastomer layer; terminals being connected to said thin metal film layer and said grille structure layer such that electrical potential can be applied across said layers, excepting said first layer, causing selective declination of the elastomer layer and therefore the metal film coating, said elastomer layer relaxing in corresponding areas of said photoconductive layer which are struck by



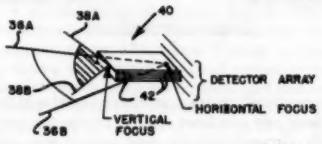
electromagnetic energy; an electrical switch; and said grille structure being made up of a plurality of lines connected to said electrical switch such that alternate lines are connected to given voltage polarity and the lines remaining may be switched to either similar or opposite voltage.

4,494,827

IMAGING APPARATUS FOR TRANSVERSE ELECTRODE ELECTRO-OPTIC TUNABLE FILTER

Richard L. Abrams, Pacific Palisades; David M. Henderson, Playa Del Rey, both of Calif.; Douglas A. Pinnow, Cheshire, Conn., and Ronald R. Stephens, West Lake Village, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 20, 1982, Ser. No. 435,522
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—385 **5 Claims**



1. An apparatus for imaging, comprising:
a. an anamorphic optical system means for transmitting and focusing a beam of polarized light carrying an image; and
b. a large aperture electro-optic tunable filter assembly having an entrance surface and an exit surface in optical alignment with said anamorphic optical system means, wherein said filter assembly includes at least one transverse field electro-optic tunable filter having electrodes, with said filter comprising a platelet of electro-optic material of a known index of refraction, and with said platelet being clad between its surface and said electrodes with a material having a lower index of refraction than said platelet material and wherein said anamorphic optical system focuses in a first direction an image onto said entrance surface and focuses in a second direction orthogonal to the first direction an image onto said exit surface.

4,494,828

ZOOM LENS SYSTEM OF RELATIVELY HIGH ZOOM RATIO RANGING TO WIDE ANGLE PHOTOGRAPHY

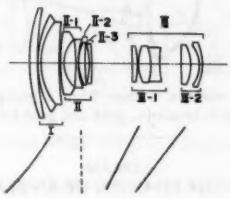
Hisayuki Masumoto, Sakai, and Shuji Ogino, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1982, Ser. No. 366,673

Claims priority, application Japan, Apr. 9, 1981, 56-53948; Apr. 10, 1981, 56-54672; Jan. 26, 1982, 57-11090

Int. Cl.³ G02B 7/04

U.S. Cl. 350—427 27 Claims



1. A zoom lens system of a relatively high zoom ratio ranging to wideangle photography in which the shortest focal length is less than the length of the diagonal line of the effective image plane, comprising from the object to the image side:

a first lens group of a positive refractive power;

a second lens group of a negative refractive power consisting of a first negative subunit, including at least two separate negative lenses, a second positive subunit located on the image side of the first negative subunit with an unchangeable air space and a third negative subunit located on the image side of the second positive subunit with an unchangeable air space; and

a third lens group of a positive refractive power, wherein at least an air space between the first and second lens groups and an air space between the second and third lens groups are changeable upon zooming.

4,494,829

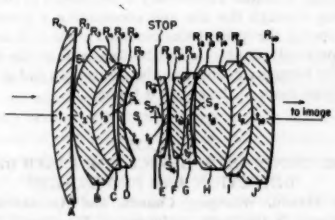
CURVED FIELD PHOTOGRAPHIC OBJECTIVE

George H. Aklin, deceased, late of Fairport, NY, and Marie M. Aklin, Voluntary Administrator, 2 Woodside Rd., Fairport, N.Y. 14450

Filed Sep. 20, 1982, Ser. No. 420,581

Int. Cl.³ G02B 9/62

U.S. Cl. 350—464 2 Claims



1. In a six-component, ten-element photographic objective, a first lens section forward of the aperture stop comprising a singlet, a doublet and a singlet in order from the long conjugate, and a second lens section rearward of the aperture stop said rearward section consisting, in order from the stop, of a negative singlet concave to the stop, a doublet in the form of a meniscus with its outer surfaces convex to the stop and comprising a biconvex element and a biconcave element with the cemented surface concave to the stop, and a biconvex triplet comprising a biconvex element and two menisci, said biconvex element having a higher index of refraction than said menisci, the cemented surfaces within said biconvex triplet being concave to the stop.

4,494,830

MOUNTING ASSEMBLY FOR OPTICAL ELEMENTS

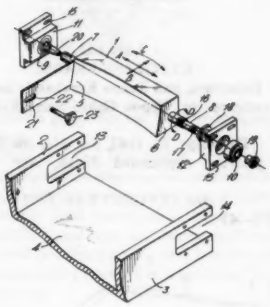
Richard W. Grainge, and Dennis Slow, both of Hatfield, England, assignors to British Aerospace Public Limited Company, London, England

Filed Aug. 6, 1982, Ser. No. 405,905

Claims priority, application United Kingdom, Aug. 13, 1981, 8124726

Int. Cl.³ G02B 7/00

U.S. Cl. 350—486 6 Claims



1. A mounting assembly including an optical element having an optically effective region and spaced end regions disposed laterally of said optically effective region, a carrier member having two spaced web regions between which the optical element lies and which carry first displacement means comprising twin location members, each slidably associated with one of said spaced web regions and cooperating with one end of said spaced end regions of the optical element for displacing said spaced end regions in the same sense as said spaced web regions to effect bodily fore-and-aft adjustment, second displacement means for displacing the optical element away from one of said spaced web regions toward the other of said spaced web region to effect bodily lateral adjustment, and tilting means comprising arm means for tilting the optical element with respect to said spaced web regions to effect angular adjustment in elevation, said twin location members of said first displacement means being capable of sliding differentially with respect to said spaced web regions to effect angular adjustment of the optical element in azimuth.

4,494,831

SPECTACLE FRAME

Kenichi Yaguchi, Chiba; Masaru Ichikawa, and Takuji Kinoshita, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,619

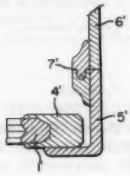
Claims priority, application Japan, Nov. 22, 1980, 55-164919

Int. Cl.³ G02C 5/00

U.S. Cl. 351—41 3 Claims

1. A spectacle frame of titanium or titanium alloy having at least one location a brazed portion of titanium or titanium alloy joined with titanium or titanium alloy, or of titanium or

titanium alloy joined with another metal, characterized in that silver-zinc alloy consisting essentially of 70–95% by weight of



silver and 5–30% by weight of zinc is used as a brazing filler metal material of the brazed portion.

4,494,832

EYEGLASS-FRAME

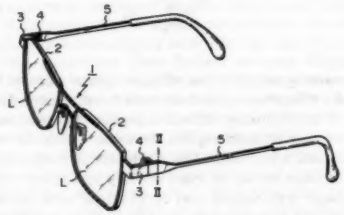
Masayuki Takamura, and Kazuo Kurahashi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 13, 1982, Ser. No. 368,038

Claims priority, application Japan, Apr. 15, 1981, 56-54141[U]

Int. Cl.³ G02C *5/18, 5/02*

U.S. Cl. 351—41 **13 Claims**



1. An eyeglass frame comprising

a pair of bows having a core-to-covering structure which includes a core exhibiting super elasticity at room temperatures and a covering clad to said core, said core being made of a material chosen from a group consisting of copper-tin-zinc alloys, copper-aluminum-zinc alloys and copper-aluminum-nickel alloys, and said covering being made of a material chosen from a group consisting of nickel and nickel base alloys.

4,494,833

EYEGLASS-FRAME

Masayuki Takamura, and Kazuo Kurahashi, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 13, 1982, Ser. No. 368,039

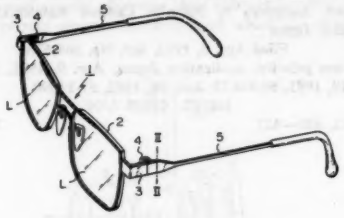
Claims priority, application Japan, Apr. 15, 1981, 56-054142[U]

Int. Cl.³ G02C *5/18, 5/02*

U.S. Cl. 351—41 **11 Claims**

1. An eyeglass-frame comprising

a pair of bows having a core-to-covering structure which includes a core exhibiting super elasticity at room temperatures and a covering clad to said core, said core being made of a material chosen from a group consisting of copper-tin-zinc alloys, copper-aluminum-zinc alloys and copper-aluminum nickel alloys, and said covering being



made of a material chosen from a group consisting of silver, silver base alloys, gold and gold base alloys.

4,494,834

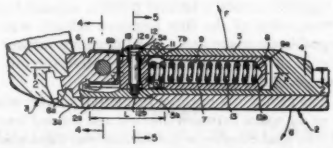
HINGE FOR THE PIVOTING OF AN ELASTICALLY DIVERTIBLE TEMPLE PIECE TO AN EYEGLASS FRAME

Vittorio Tabacchi, Padua, Italy, assignor to Safilo, S.p.A., Padua, Italy

Filed May 17, 1982, Ser. No. 378,856

Int. Cl.³ G02C *5/16, 5/22*

U.S. Cl. 351—153 **8 Claims**



1. A hinge for pivoting an eyeglass temple piece divertible between a closed position against an eyeglass frame and beyond a normal open position in relation thereto, which comprises a slide, a seat provided in an end section of the temple piece, the slide being slideably mounted in the seat and having an end protruding therefrom, the slide having a hole with a bottom wall therein, the hole extending coaxially into the slide over a predetermined depth from the protruding end thereof, a slot, the slot extending longitudinally in the slide over a predetermined length from the protruding end thereof, a block, the block being mounted transversely at the mouth of the seat and extending through the slot and constituting a guide for the slide, a spring, the spring being mounted in the hole and engaging respectively the block and bottom wall of the hole, and means for hingedly connecting the protruding end of the slide to the front piece of the eyeglass frame.

4,494,835

POLYCONDUCTOR DEVICE FOR LASER BEAM DETECTION AND PROTECTION

Michael Hamid, Winnipeg, Canada, and Anastasios Lionis, Vlissingen, Netherlands, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,596

Int. Cl.³ G02C *1/00;* G01J *1/42*

U.S. Cl. 351—158 **6 Claims**

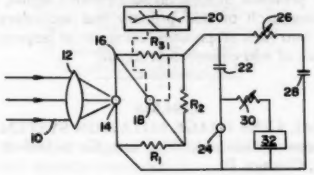
1. An apparatus for detecting and protecting against high intensity laser radiation comprising:

(a) a lens to focus said laser radiation at a predetermined spot;

(b) at least one radiation sensing polyconducting film positioned approximate said predetermined spot, said film

having points for electrical connection such that a film bias voltage may be applied across said film and such that said film may be operably connected in an electrical network;

(c) a Wheatstone bridge circuit comprising a portion of said network in which said polyconducting film constitutes



one arm of said bridge circuit to a predetermined voltage level;

(d) means for electrically compensating voltage variations in said bridge network induced by ambient temperature fluctuations; and

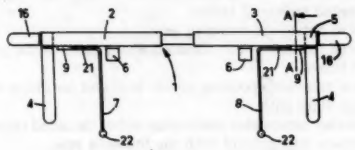
(e) means for reading voltage variations in said bridge network from said predetermined voltage level.

4,494,836

DEVICE FOR DETERMINING AND MEASURING MONOCULAR PUPILLARY DEVIATIONS IN A PATIENT'S EYES

Jean Cogez, Paris, France, assignor to Essilor International, Creteil, France

Filed Apr. 13, 1982, Ser. No. 368,014
Claims priority, application France, Apr. 29, 1981, 81 08 558
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—204 **6 Claims**



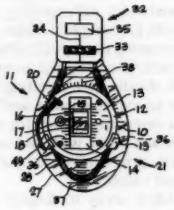
1. A device to determine and/or measure the monocular pupillary deviations in a patient's eyes, comprising a cross-bar, carrying two adjustable reticles, to determine and/or measure the distance between the pupil of each eye, the said cross-bar being formed of two casings which can move telescopically in relation to each other, and each of which contains a runner capable of moving inside it under the control of an outside regulating knob, said runner being connected to a removable reticle-holder rod, each such telescopic casing futher comprising a downward-pointing arm, adapted to be held against the corresponding inside or outside surface of one of the arms of a spectacle frame worn by a patient by at least one spring exerting force on each casing, the said device being characterized by the fact that each casing comprises an internal extension which enables the two casings to fit telescopically inside each other, said internal extension including a supporting surface for one end of a compression spring, positioned in such a way that the force of the spring causes the casings to move away from each other, and presses the downward arms against the inside surface of the spectacle arms.

4,494,837

PUPIL LOCATION GAUGE

Paul F. Bommarito, 10684 Martinwood Way, Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 179,807, Aug. 20, 1980, Pat. No. 4,381,143, which is a continuation-in-part of Ser. No. 6,340, Jan. 25, 1979, abandoned. This application Apr. 25, 1983, Ser. No. 488,085
Int. Cl.³ A61B *3/10, 3/04*
U.S. Cl. 351—204 **11 Claims**



1. A pupil location gauge for use in an ophthalmic test lens holder comprising,

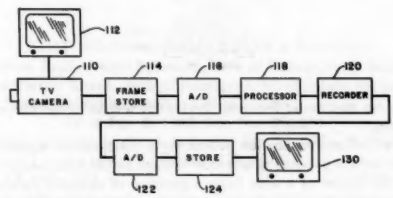
a disc mountable in a test lens holder having a graduated scale and an insert containing a vision interference index member, said index member comprising a material which decreases visual light transmission, having a center line intersecting the visual axis, and mechanical means associated with said disc for moving said insert to change the position of said index member in relation to the graduated scale on said disc.

4,494,838

RETINAL INFORMATION MAPPING SYSTEM

Donald L. Wallquist, and Gilbert G. Kuperman, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1982, Ser. No. 398,132
Int. Cl.³ A61B *3/14*
U.S. Cl. 351—206 **4 Claims**



1. A method of determining the effects on vision of various conditions by processing an image frame having a given number of pixels horizontally and vertically which comprises the steps of:

digitizing the value of each pixel;

the array of the digitized frame being processed so that a non-linear smoothing of the intensity values is carried out on the basis of physiological data regarding the distribution of rods across the retina and perceptual data regarding differential visual acuity as a function of retinal field angle, the relative visual acuity curve being implemented by performing an adaptive convolution on the digital scene, by

determining for each point in the array the radial distance R to the array center (which corresponds to the fovea);

supplying a visual acuity factor as a parameter, useful values

of the visual acuity factor being in the range of zero up to 0.500, increasing values producing output images which are less clear, and at a value of 1.0 the output image being completely blurred;

assigning to each pixel of the image a neighborhood having a radius r, the neighborhood comprising all pixels which are both within the radius r and within the image boundary, the radius r being a function of said visual acuity factor and of the distance R of the pixel from the center of the image, so that the effects of the distribution of rods in the retina provides the weighting for allocating signal processing bandwidth differentially across the scene in accordance with human physiological data;

for each pixel, summing the digital values of all pixels within its neighborhood, counting the number of pixels in the neighborhood, dividing the resulting sum by the resulting count to form an average value, and assigning that average value as a new digital value for the pixel;

forming a new image frame with said new digital values for all of the pixels, providing an output array composed of the new filtered values; and

supplying the output array to display means for viewing, with intensity proportionate to digital value.

4,494,839

AUTOMATIC FOCUSING DEVICE FOR SLIDE PROJECTORS

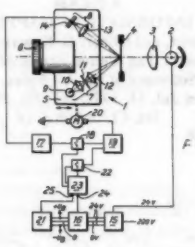
Dietrich Brueckner, Wetzlar-Neuborn, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,312

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207152

Int. Cl.³ G03B *3/10*

U.S. Cl. 353—101 **5 Claims**



1. An automatic focusing device for a slide projector, comprising:

control unit means for producing a cancellation signal;

means for producing an error voltage signal determinative of deviation of a slide from a position of sharpest focus;

manual control means for producing a manual control signal;

means, responsive to said manual control signal, for generating a manual focus signal from said manual control signal;

a positioning motor;

means, responsive to said error voltage signal or to said manual control signal, for driving said positioning motor;

primary switch means, electrically interposed between said error voltage signal producing means and said driving means, and switchable between a first state in which said error voltage signal producing means is connected to said driving means, and a second state, in which said error voltage signal producing means is not electrically connected to said driving means;

secondary switch means, electrically interposed between said manual focus signal generating means and said driving means, and switchable between a first state in which said manual focus signal generating means is not electrically connected to said driving means, and a second state in which said manual focus signal generating means is not electrically connected to said driving means; and

switching amplifier means, responsive to said manual control signal and said cancellation signal, and connected to said primary switch means and said secondary switch means, for switching each of said primary and secondary switch means into the respective second state of each in response to the presence of said manual control signal, and for switching each of said primary and secondary switch means into their respective first states in response to the presence of said cancellation signal.

4,494,840

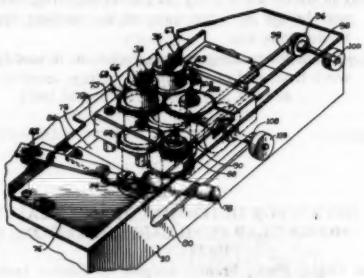
DUAL LENS IMAGE ROTATION SYSTEM

John S. Toeppen, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 6, 1983, Ser. No. 529,787

Int. Cl.³ G03B *21/22*

U.S. Cl. 353—101 **8 Claims**



1. Apparatus for rotating a projected image in an image light path comprising:

two projection lenses mounted adjacent each other in separately adjustable threaded receiving means for individually focusing the lenses by rotating the receiving means,

a focusing gear which engages individually the adjustable threaded receiving means,

means to rotate the focusing gear,

an image rotation prism disposed above each of the projection lenses,

selector means to position either lens and its prism in the image light path,

the selector means also positioning either threaded receiving means in engagement with the focusing gear,

a prism gear surrounding each prism, a drive gear simultaneously engaging both of the prism gears, and means to rotate the drive gear to rotate the prisms in unison an identical amount to cause the amount of rotation of the projected image to be the same regardless of which projection lens is disposed in the image light path.

4,494,841

ACOUSTIC TRANSDUCERS FOR ACOUSTIC POSITION SENSING APPARATUS

Michael A. Marcus, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

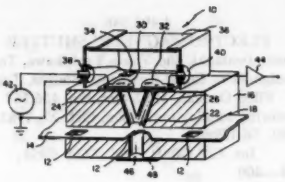
Filed Sep. 12, 1983, Ser. No. 531,375

Int. Cl.³ G03B *7/24, 17/00;* H04R *17/00*

U.S. Cl. 354—21 **30 Claims**

1. Acoustic position sensing apparatus of the type for sensing the position of an object with respect to a sensing port in an acoustic resonator; the apparatus including acoustic transducer means for generating an acoustic signal of a predetermined frequency in the resonator and for sensing the acoustic signal in the resonator, the sensed signal having a component representing the position of the object with respect to the sensing port;

characterized by said acoustic transducer means comprising a sheet of poled piezoelectric material having electrodes on



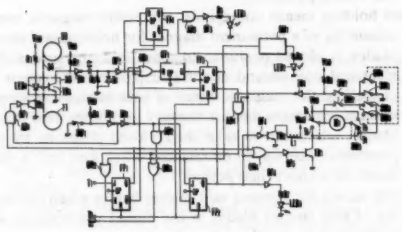
opposite sides thereof, said sheet being fixed over a transducer port in said acoustic resonator.

4,494,842

AUTOMATIC REWINDING DEVICE FOR FILM IN CAMERA

Hiroyuki Kimura; Mutsunobu Yazaki, both of Kanagawa; Hideo Taka, and Makoto Masunaga, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,066
Claims priority, application Japan, Nov. 13, 1981, 56-182036; Nov. 13, 1981, 56-182037; Nov. 13, 1981, 56-182038
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173.11 **9 Claims**



1. An automatic rewinding device for film in a camera comprising:

(a) transporting means for moving film in response to the driving force of an electric motor;

(b) timer means having a released state and a reset state for producing a first signal a predetermined time after having been released from the reset state;

(c) changeover means for receiving said first signal to change over a film winding operation of said transporting means to a film rewinding operation;

(d) detecting means for detecting film movement during film winding by said transporting means and for producing a second signal for resetting said timer means in response to movement of the film;

(e) reset means for producing a third signal for resetting said timer means when one cycle of film winding operation for one frame is completed; and

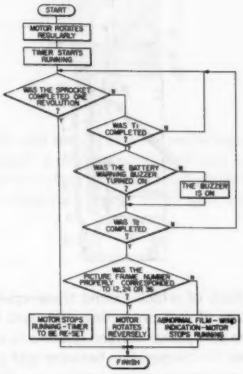
(f) latch means for latching the first signal of said timer means, said latch means producing a fourth signal for actuating said timer means to be reset as the first signal is latched.

4,494,843

AUTOMATIC FILM REWIND METHOD FOR CAMERA

Takashi Kobayashi, Tsuru; Takeshi Inagaki, Hachioji; Hiroshi Takahashi, Hachioji, and Takayuki Ohisa, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Oct. 15, 1982, Ser. No. 434,627
Claims priority, application Japan, Oct. 19, 1981, 56-167437
Int. Cl.³ G03B 1/60, 17/36
U.S. Cl. 354—214 **8 Claims**


START
MOTOR ROTATES REGULARLY
TIMER STARTS RUNNING
WAS THE SPROCKET COMPLETE ONE REVOLUTION
WAS T1 COMPLETED
WAS THE BATTERY WARNING BUZZER TURNED ON
THE BUZZER IS ON
WAS T2 COMPLETED
WAS THE PICTURE FRAME NUMBER PROPERLY CORRESPONDED TO 12, 24 OR 36
MOTOR STOPS RUNNING - TIMER TO BE RE-SET
MOTOR ROTATES REVERSELY
ABNORMAL FILM - WIND INDICATION - MOTOR STOPS RUNNING
FINISH

1. A method for automatically rewinding the film in a camera having a battery-powered automatic film rewinder, the method comprising the steps of:

(a) detecting a phenomenon in which a frame of film is not being advanced normally;

(b) determining whether the film is not advancing normally because of battery deterioration;

(c) determining whether the frame number of the film being advanced corresponds to a specific frame number of the film; and

(d) rewinding the film only if the film is not advancing normally and the frame number of the film being advanced corresponds to a predetermined number.

4,494,844

LIGHT SHADING DEVICE FOR A CAMERA

Masahisa Fujino; Akio Sunouchi, both of Tokyo; Ryuji Suzuki, and Tatsuo Konno, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,234
Claims priority, application Japan, Jun. 18, 1981, 56-90385
Int. Cl.³ G03B 9/28, 19/12
U.S. Cl. 354—241 **5 Claims**

1. A light shading device for a camera having a focal plane shutter comprising:

a rear wall forming a part of the camera body for defining an exposure window;

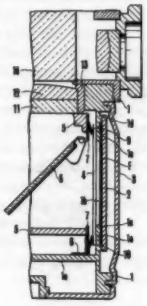
a shutter curtain arranged to run in a shutter curtain running path extending in front of said exposure window so as to open and close said exposure window;

a plurality of supports fixed in the camera body arranged to face said shutter curtain running path, each of said supports defining a planar surface extending generally in parallel relationship to the plane of said shutter curtain and a protuberant part defined with a stepped configuration extending outwardly from said planar surface toward said shutter curtain; and

a light shading curtain consisting of a relatively soft resilient material, said light shading curtain including a base part which is rigidly affixed on said planar surface and a pro-

jecting part extending from said base part with its end in abutting contact with said shutter curtain;

said projecting part having a generally planar surface in abutting contact with said protuberant part to be resiliently deflected in order to urge said end thereof into contact with said shutter curtain said protuberant part being defined by a pair of nonparallel generally planar



surfaces both of which extend transversely to said abutting surface of said projecting part, said base part being located on said planar surface relative to said protuberant part so that the cooperation between said protuberant part and said projecting part operates to effect a particular spacing between said base part and said abutting contact thereby to effect a desired resilient pressure with which said end of said projecting part abuts said shutter curtain.

4,494,845

SYSTEM FOR CONTROLLING THE ACTIVITY OF DEVELOPING SOLUTIONS AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIALS

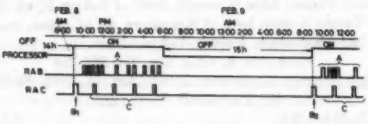
Haruo Aoki, Kanagawa, and Masahiro Terahata, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1983, Ser. No. 500,596

Claims priority, application Japan, Jun. 2, 1982, 57-94271; Jun. 2, 1982, 57-94272

Int. Cl.[3] **G03D** *3/06;* **G06F** *15/46*

U.S. Cl. 354—297 **6 Claims**



1. A method for controlling the activity of developing solution, comprising the steps of:

electronically storing data collected through the use of control strips, said control strips providing reference data on first and second testing scales, said testing scales being correlative to different photographic sensitivities;

electronically comparing the most recently collected first testing scale data with first testing scale data stored previously to correct the developing solution condition for which said testing scale is correlative;

electronically revising said second testing scale data to comport with the correction to the developing solution brought about by the previous step; and

electronically comparing the most recently collected and revised second testing scale data with second testing scale data stored previously to correct the developing solution condition for which said second testing scale is correlative.

4,494,846

ELECTROMAGNETIC SHUTTER

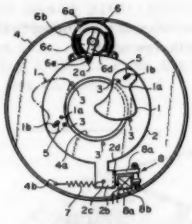
Tomio Kurosu, Iwatsuki, and Yukio Yoshikawa, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,567

Claims priority, application Japan, Oct. 27, 1981, 56-159799; Oct. 27, 1981, 56-159800

Int. Cl.[3] **G03B** *7/08, 7/26, 9/08*

U.S. Cl. 354—400 **12 Claims**



1. Electromagnetic shutter for a camera having an exposure control circuit comprising:

shutter blades for opening and closing the aperture of said shutter;

a shutter control circuit having a photoelectric element for measuring the scene brightness as to generate a proper exposure signal for closing said shutter blades for the proper exposure after the same have been opened;

holding means for releasably holding said shutter blades in the closed positions;

said holding means comprising composite magnetic means consisting of a permanent magnet for holding said shutter blades in closed positions to close said aperture and an electrical coil wound about said permanent magnet for cancelling the magnetic force of said permanent magnet upon energization thereof, thereby permitting said shutter blades, which are held in their closed positions by said permanent magnet, to be released when said coil is energized for a short time period;

spring means for opening said shutter blades when the holding of said shutter blades in the closed positions by said holding means is released; and

electromagnetic driving means actuated by said proper exposure signal of said shutter control circuit for driving said shutter blades from the open positions to the closed positions against the action of said spring means so as to permit said shutter blades to be held in the closed positions by said holding means.

4,494,847

DISTANCE MEASURING SYSTEM

Masanori Yamada, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,280

Claims priority, application Japan, Aug. 18, 1981, 56-129171; Jan. 14, 1982, 57-4310

Int. Cl.[3] **G03B** *7/08, 15/03, 17/40;* **G01C** *3/00*

U.S. Cl. 354—403 **9 Claims**

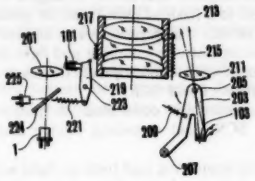
1. A distance measuring system comprising:

(a) light emitting means for emitting light to illuminate an object;

(b) light measuring means for measuring light reflected from the object;

(c) means for broadening a distance measuring zone when

the brightness on the object is lower from a distance measuring zone when the brightness is high; and



(d) electrical output means for producing the output signal of said light measuring means in the form of a signal representing a distance to the object.

4,494,848

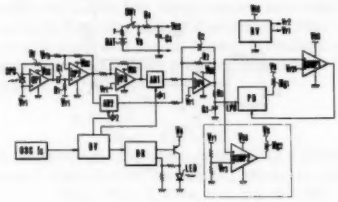
DISTANCE MEASURING DEVICE

Masahiko Ogawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,603

Int. Cl.³ G03B *7/08;* G01C *3/00*

U.S. Cl. 354—403 **18 Claims**



1. A distance measuring device to project a distance measuring signal onto an object and receive a signal reflected therefrom thereby measuring a distance to said object, comprising:

(A) signal receiving means for receiving said distance measuring signal reflected from the object;

(B) distance indicating means for indicating a distance to the object depending on an output of the signal receiving means;

(C) detection means for detecting when the signal receiving means is placed in a saturated state by external noise elements received together with the distance measuring signal, said detection means being arranged for regulating the operation of the distance indicating means when the saturated state is detected.

4,494,849

FOCUS DETECTING DEVICE FOR A CAMERA

Yasuhiro Namba, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 8, 1983, Ser. No. 472,883

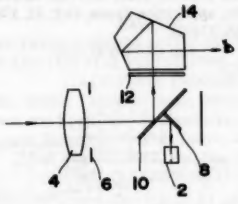
Claims priority, application Japan, Mar. 9, 1982, 57-37832; Dec. 27, 1982, 57-230012

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—406 **31 Claims**

1. A focus device for detecting a focusing condition of an objective lens by receiving the light passed through the objective lens, comprising:

means for receiving the light rays passed through said objective lens to produce electrical signals, said light receiving means including a first photoelectric device which contains a plurality of photoelectric elements in contact with an optical axis of said objective lens in such a manner that said photoelectric elements are arranged in parallel with said optical axis for receiving the light rays passed through a first portion of said objective lens, and a second photoelectric device which contains a plurality of photoelectric elements in contact with the optical axis in such a manner that said photoelectric elements are arranged in



parallel with said optical axis for receiving the light rays passed through a second portion of said objective lens with respect to a predetermined focal plane in accordance with said electrical signals from said light receiving means.

4,494,850

FLASH PHOTOGRAPHING SYSTEM

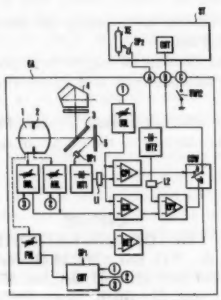
Makoto Katsuma; Masaharu Kawamura, and Masanori Yamada, all of Kanagawa, Japan, assignors to Canon Kabushiki, Kaisha, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,082

Claims priority, application Japan, Jun. 21, 1982, 57-107250; Jun. 22, 1982, 57-107482

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—416 **32 Claims**



32. A flash device comprising:

(a) flash means; and

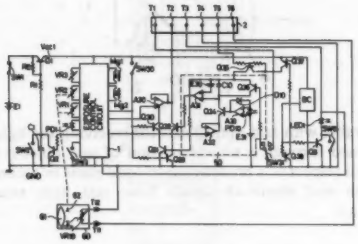
(b) a control circuit having a distance light adjusting mode and a second light adjusting mode in which the control circuit adjusts the quantity of light on the basis of a reflected light coming from an object to be photographed as a result of a flash by said flash means, said control circuit being arranged to perform flash exposure control by shifting said distance light adjusting mode to said second light adjusting mode when an accessory that varies the quantity of a transmission light passing through the photo-taking lens of a camera is mounted on the photo-taking lens.

4,494,851

DISPLAY UNIT FOR FLASHLIGHT PHOTOGRAPHY

Osamu Maida; Hiroshi Hasegawa; Nobuyoshi Hagyuda, all of Tokyo, and Yoshikazu Iida, Chigasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,430
Claims priority, application Japan, Oct. 31, 1981, 56/174925; Oct. 31, 1981, 56/174926
Int. Cl.³ G03B 1/00
U.S. Cl. 354—421 20 Claims



1. In a flashlight emission apparatus having means for lighting a flash tube to illuminate an object to be taken and means for controlling the quantity of emitted light from said flash tube, said apparatus being cooperative with a camera having means for generating preset information of ASA speed value of a film and aperture value of the taking lens prior to taking, the improvement provided with a device for making a display of the limit of object distance for providing an optimum exposure to said film by the emitted light controlled by said control means, the device comprising:

(a) means for receiving said preset information from said camera to provide first data corresponding to the received information;

(b) means for providing second data substantially identical with said first data;

(c) means for providing third data indicative of the limit of the quantity of emitted light controllable by said control means;

(d) selection means for selecting one data from the first data and second data;

(e) means for forming an output corresponding to said limit of object distance from said selected one and third data; and

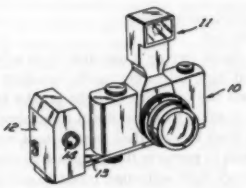
(f) means for effecting a visual display of said limit of object distance in response to the output of said output forming means.

4,494,852

PHOTOFLASH DETECTOR

Roland Smith, Jr., P.O. Box 6789, Hollywood, Fla. 33021

Filed May 25, 1983, Ser. No. 497,880
Int. Cl.³ G03B 17/18, 17/56
U.S. Cl. 354—467 5 Claims



1. A photoflash detector for use with a camera having a photoflash unit for producing a flash of light when the camera shutter opens, said detector comprising:

a light-activated SCR electrically disconnected from said photoflash unit and operatively arranged to be activated in response to a flash of light from the photoflash unit;

a signalling device which produces an audible signal;

circuit means operatively coupling said light-activated SCR to said signalling device to operate the latter in response to the activation of said SCR;

a battery operatively connected to power said light-activated SCR, said signalling device and said circuit means;

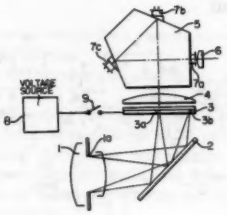
and a housing containing said battery, light-activated SCR, signalling device and circuit means to provide a self-contained unit.

4,494,853

PHOTOMETRIC METHOD FOR CAMERAS

Koji Watanabe, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,194
Claims priority, application Japan, Aug. 2, 1980, 55-106600
Int. Cl.³ G03B 7/08, 13/24
U.S. Cl. 354—478 4 Claims



1. The method of varying photometric sensitivity distribution in a camera having an automatic exposure control of the through-the-lens photometric type in which the amount of exposure is determined by a photoreceptor, which includes the steps of passing the light from the picture area to the photoreceptor and to a view finder through a focusing screen comprising an electro-optical element, and varying the photometric sensitivity distribution by controlling the voltage applied to said electro-optical element, whereby an operator is able to confirm the focusing situation and photometry range through said view finder.

4,494,854

ENERGY SAVING CAMERA

Shigeru Yamaga, Tokyo, and Masamichi Furukawa, Hamamatsu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 282,073, Jul. 10, 1981, abandoned. This application Aug. 24, 1983, Ser. No. 525,805
Claims priority, application Japan, Jul. 11, 1980, 55-94838; Oct. 13, 1980, 55-145557[U]
Int. Cl.³ G03B 7/26, 17/02; H01M 10/44; H01L 31/04
U.S. Cl. 354—484 15 Claims

1. A power supply circuit of a camera having a camera body provided with a battery chamber for supplying an electric power to a control circuit of said camera for carrying out at least a part of the photographic operation, comprising:

a solar battery;

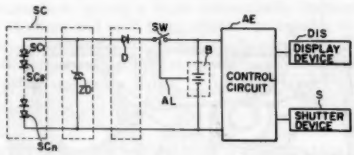
a second battery removably provided in said chamber to be electrically connectable to said control circuit, said second battery being a selected one of either a primary battery or a second battery;

means for indicating said second battery to be a secondary battery when said second battery is a secondary battery;

connection means for electrically connecting said solar battery and second battery in parallel;

switch means provided in said connection means for connecting said solar battery to or disconnecting said solar battery from said second battery through said connection means; and

detecting means for detecting whether said battery is a primary battery or a secondary battery based on said means for indicating when said battery is removably provided in said battery chamber in position, said detecting means causing said switch means to connect said solar battery to said second battery through said connection means only when said second battery is detected to be a secondary battery due to presence of said means for indicating, said detecting means causing said switch means to maintain said solar battery disconnected from said second battery when said second battery is detected to be a primary battery due to the presence of said means for indicating.



4,494,855

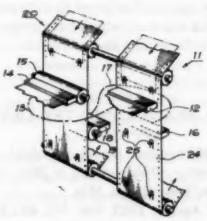
SYNCHRONOUS COPYING AND COLLATING SYSTEM

Richard H. Colwill, 1007 Hellam St., Monterey, Calif. 93940

Filed Mar. 7, 1984, Ser. No. 587,110

Int. Cl.³ G03B *27/00*

U.S. Cl. 355—1 **15 Claims**



1. A synchronous copying and collating system comprising:

a. an original document feed path and a copy paper feed path arranged side by side;

b. said original and copy feed paths each having reprographic portions extending vertically downward;

c. endless drive belts with drive perforations arranged to move along said reprographic portions of each of said feed paths;

d. pinwheel drive means for moving said endless belts simultaneously at the same speed for moving original paper and copy paper in a substantially continuous succession through each of said paths;

e. said endless drive belts having alignment pegs arranged to locate original and copy paper at predetermined regular intervals on said endless drive belts;

f. at least one fiber optic lens array arranged adjacent said original path for reading information moving down said original path;

g. reprographic means for copying information onto said copy paper moving down said copy path;

h. fiber optic means for transferring information read from said original path to said reprographic means; and

i. a recirculation path for recirculating original documents through said original path.

4,494,856

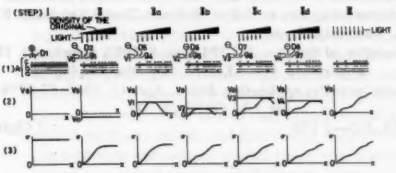
ELECTROPHOTOGRAPHIC METHOD AND APPARATUS FOR PROVIDING ACCURATE HALF-TONE IMAGES

Takao Aoki, Abiko; Takahiro Inoue; Masahiro Goto, both of Yokohama, and Kenji Takeda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 410,061

Int. Cl.³ G03G *15/22*

U.S. Cl. 355—3 R **14 Claims**



1. A process for forming an electrostatic latent image on a photosensitive medium having an electroconductive layer, a photoconductive layer and an insulating surface layer, the process comprising the steps of:

(a) uniformly charging the insulating surface layer of said photosensitive medium with a selected polarity;

(b) subjecting said photosensitive medium to corona discharge having a component of opposite polarity to that of the uniform charge of step (a) while exposing said photosensitive medium to a light image;

(c) increasing the surface potential on said photosensitive medium at the half-tone area of the light image by applying a light image exposure onto said photosensitive medium;

(d) subjecting said photosensitive medium to corona discharge having the component of opposite polarity to that of the uniform charge of step (a) under the effect of light image exposure thereby discharging a portion of the surface potential of the half-tone area previously increased at step (c) so as to decrease the surface potential on said photosensitive medium previously obtained at step (c); and

(e) exposing said photosensitive medium to uniform light.

7. Apparatus for forming electrostatic latent images on a photosensitive medium, said apparatus comprising:

(a) an endless moving photosensitive medium having an electroconductive layer, a photoconductive layer and an insulating surface layer;

(b) optical means for guiding a light image to said photosensitive medium;

(c) means for applying a first charge for uniformly charging the insulating surface layer of said photosensitive medium with a selected polarity;

(d) corona charging means for applying a second charge to said photosensitive medium using corona having the component of opposite polarity to that of the uniform charge with simultaneous image-wise exposure;

(e) corona charging means for applying corona having the component of opposite polarity to that of the uniform charge under the effect of light image exposure to decrease the surface potential on the photosensitive medium as compared to such potential effected by said means for applying said second charge;

(f) guiding means provided between the corona charging means for applying said second and third charge for guid-

ing the light image to the downstream side of said charging means for applying said second charge; and

(g) illumination means for uniformly exposing said photosensitive medium to light.

4,494,857

IMAGING METHOD USING A CHARGED INSULATING LAYER

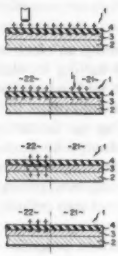
Tsuyoshi Ueno; Shinichi Hashimoto, both of Fujisawa; Kouzou Matsuyama, Yokohama, and Nobutaka Wakao, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 252,194, Apr. 8, 1981, abandoned. This application Apr. 13, 1983, Ser. No. 484,485

Claims priority, application Japan, Apr. 11, 1980, 55-47781

Int. Cl.³ G03G *15/052*

U.S. Cl. 355—3 CH 7 Claims



1. An electrophotographic imaging method for reproducing an image comprising the steps of:

providing a photosensitive drum having a conductive base, a photosensitive layer over said base and an electrically insulating layer over said photosensitive layer;

charging, via a contact-type charger, positive charges on said insulating layer thereby bringing negative charges from said conductive base into said photosensitive layer to exist latently therein;

imaging exposing said photosensitive drum with an image to be reproduced having light and dark regions, the light regions causing some of the positive charges on said insulating layer to be discharged and the dark regions not substantially affecting charges on the insulating layer;

discharging, by applying via a contact-type charger an A.C. voltage to said photosensitive and insulating layers, the A.C. voltage substantially removing from said insulating layer any remaining charges in said light regions while not removing all of the charges in said dark regions thereby rendering said light regions substantially charge-free with said dark regions having charges remaining thereon, latent negative charges in said photosensitive layer corresponding in number to the positive charges reduced by said discharging step being drawn into said conductive base by positive charges generated therein, those negative charges corresponding in number to the number of positive charges on said insulating layer existing latently in said photosensitive layer at said dark regions, the photosensitive and insulating layers being substantially charge free at said light regions, thereby forming a latent image having a contrast corresponding to the image to be reproduced.

4,494,858

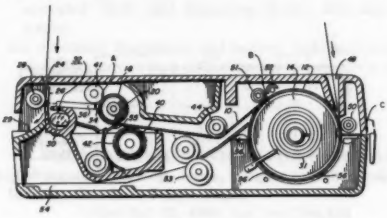
GEOMETRIC DESIGN REPRODUCING APPARATUS

Charles A. Gage, Webster; Timothy T. Blair, Shortsville, and Thomas W. Morgan, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,615

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR 12 Claims



1. Electrostatographic reproducing apparatus comprising a movable imaging surface, means to transport said imaging surface along a path past a series of operational processing stations including at least an image forming station and a developed toner image and copy substrate contact station, said apparatus also including a copy substrate entrance to the apparatus, a copy substrate path to guide said copy substrate from said entrance to said copy substrate contact station, means to transport said copy substrate along said copy substrate path, the distance along the imaging surface path from said image forming station where the lead edge of an image is formed on the imaging surface to the initial line of contact of the imaging surface with the copy substrate being equal to the distance along said copy substrate path from the copy sheet entrance to the initial line of contact of the lead edge of the copy substrate with the lead edge of the image on the imagining surface, and means at the beginning of each image cycle to simultaneously actuate said movable imaging surface and said copy substrate transport whereby the lead edge of the formed image on the imaging surface and the lead edge of the copy substrate simultaneously arrive at the initial line of contact.

4,494,859

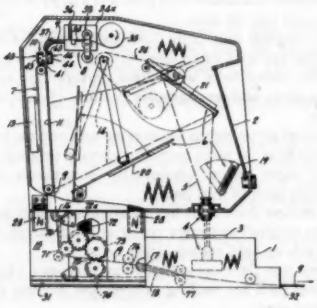
MODULAR READER/PRINTER DEVELOPER APPARATUS

Ronald J. Frias, Milwaukee; David Jagielski, Kewaskum, and Nicholas R. Schetter, Rubicon, all of Wis., assignors to Micron Corporation, Iron Ridge, Wis.

Filed Apr. 6, 1983, Ser. No. 482,524

Int. Cl.³ G03G *15/00, 15/26*

U.S. Cl. 355—5 23 Claims



1. A reader/printer apparatus comprising an optical image

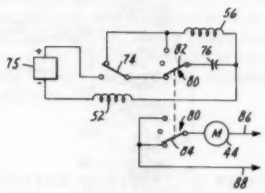
transmitting means, a display means, a photoconductive copy exposure means having a conveyor means, means for selectively coupling said transmitting means to said display means and said exposure means, a supporting main frame for said transmitting means in fixed position relative to said display means and said exposure means and having a hard copy paper outlet, a releasable charger support means located to the infeed side of said exposure means adapted to releasably support an elongated corona charging means having a charging passageway in alignment with said exposure conveyor means, and a developing chamber located to the discharge side of said exposure conveyor means and having an opening for receiving a self-contained developer module, a plurality of said developer modules each having a frame substantially corresponding to said chamber and each being adapted to reliably be mounted within said chamber and each having a paper inlet and a paper discharge aligned with the exposure conveyor means and with said hard copy paper outlet.

4,494,860

CONTROL CIRCUITRY FOR A CONTINUOUS COPY MACHINE

Robert F. Nepper, and Alan J. Solyntjes, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1983, Ser. No. 518,644
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—13 **3 Claims**



1. An electrically operated copy machine having a transferring mechanism driven by a drive motor for providing synchronous movement in the copy machine of copy paper and original sheets of varying lengths where the copy paper is provided by a continuous web of copy paper from a copy paper supply roll and apparatus and circuitry responsive to the presence and absence of the original for cutting sheets from the copy paper which correspond to the length of the original including:

first and second copy paper feed rollers included in the transferring mechanism, said first feed roller positioned between the copy paper supply roll and said second feed roller;

first and second solenoids, each having a winding;

a capacitor having one side connected to one end of each of said windings;

a D.C. power supply having one side connected to the other end of said second solenoid winding;

a cutter positioned in the path of travel of the copy paper between said first and second feed rollers and operatively connected to said first solenoid;

first switch means positioned along the path of travel for an original sheet presenting a first position and a second position in response to the absence and presence, respectively, of an original sheet presented to the copy machine at said first switch means, said first switch means operatively connected to said other end of said first solenoid winding, the other side of said capacitor and the other side of said D.C. power supply forming a first circuit loop including said first solenoid winding and said capacitor when said switch means is presenting said first position and forming a second circuit loop including said D.C. power supply, said capacitor and said second solenoid winding when said switch means is presenting said second position, said second circuit loop when formed causing said capacitor to be charged and causing said second solenoid winding to be energized while said capacitor is being charged and said first circuit loop when formed subsequent to the formation of said second circuit loop causing said first solenoid winding to be energized by the discharge of said capacitor;

a clutch adapted for control by said second solenoid and operatively engaged between the drive motor and said first feed roller for providing sufficient rotation of said first feed roller to move the copy paper from said cutter to said second feed roller following energization of said second solenoid; and

manually operated second switch means including a first pole presenting a first, a second and a third position and a second pole presenting a first, a second and a third position, said first pole being operatively connected between said first switch means and said other side of said capacitor and to said other side of said first solenoid winding forming a connection between said other side of said capacitor and said first switch means to enable said first switch means to form said first or second circuit loops when said second switch means is presenting said first position, disconnecting said other side of said capacitor and said first switch means to disable said first switch means from forming said first and second circuit loops when said second switch means is presenting said second position and forming a third circuit loop including said first solenoid winding and said capacitor when said second switch means is presenting said third position, said third circuit loop when formed subsequent to the formation of said second circuit loop causing said first solenoid winding to be energized by the discharge of said capacitor, said second pole of said second switch means being adapted to operatively connect said drive motor to a power supply when presenting said first and third positions and disconnecting said drive motor from said power supply when presenting said second position.

4,494,861

COPYING APPARATUS

Tetsuji Tachika, Tokyo; Hisashi Sakamaki, Yokohama, and Hiroyuki Hattori, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 797,846, May 17, 1977, Pat. No. 4,275,958. This application Dec. 10, 1980, Ser. No. 215,023
Claims priority, application Japan, May 21, 1976, 51-58705
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

1. A copying system having a copying apparatus comprising:

means for setting numeric data for a copying operation;

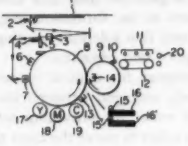
storage means for storing first and second numeric data for a plurality of copying operations, wherein each copying operation comprises the formation of a plurality of complete copies set by said setting means;

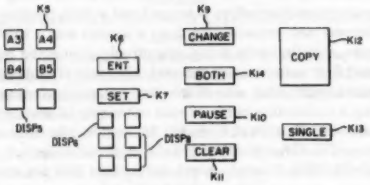
first manual switch means for enabling second numeric data to be set in said storage means by said setting means without affecting the numeric data already stored in said storage means;

second manual switch means for causing the second numeric data to be read out from said storage means after completion of the copying operation according to the first numeric data stored in said storage means; and

control means for causing said copying apparatus to carry out the first copying operation to obtain a first plurality of copies in accordance with the first numeric data and the second copying operation to obtain a second plurality of copies in accordance with the second numeric data read out from said storage means by operation of said second

manual switch means, wherein during the time that the copying operation according to the first numeric data is





being carried out, the second numeric data is retained in said storage means.

4,494,862

COMPUTERIZED INFORMATION PROCESSING SYSTEM EQUIPPED WITH COPYING APPARATUS

Atsuyuki Tanaka, Shinshiro, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1981, Ser. No. 306,408

Claims priority, application Japan, Sep. 30, 1980, 55-136935; Jul. 31, 1981, 56-121528

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—14 C **10 Claims**

1. A computerized information processing system including a copying apparatus and a computer means provided with a memory means for storing image signals, said copying apparatus being capable of composing an image, on a recording paper, of an original sheet placed on said copying apparatus, including also an image based on the image signals from said computer and at least comprising:

a photoreceptor drum;

a charging means for electrically charging a surface of said photoreceptor drum;

a scanning and projecting means for scanning the original sheet and projecting an optical image of the original sheet onto the surface of said photoreceptor drum;

a transport means for transporting a recording paper;

a transfer means for transferring to the recording paper, an image formed on said photoreceptor drum;

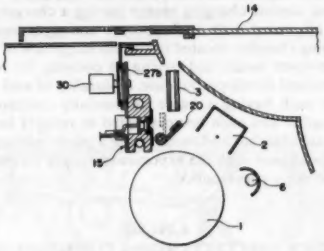
an image forming means for forming a visible image on the recording paper in response to the image signals supplied from said computer;

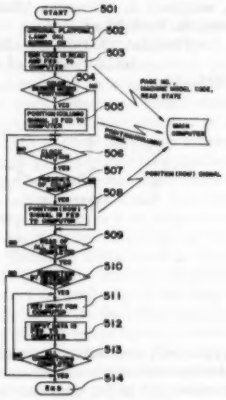
a mark read means for reading optical marks provided on the original sheet and converting the optical marks into electrical signals;

a signal output means for supplying to said computer, the electrical signals as instruction signals thereto;

said computer means being for at least supplying the image signals to said image forming means of said copying apparatus and executing, in response to the instruction signals supplied from said copying apparatus, a predetermined processing of the image signals stored in said memory means; and

said copying apparatus being operatively associated with said computer means in such a manner that, when said copying apparatus forms a composite image on the recording paper by composing a scanned and projected image of the original sheet provided with the optical marks corresponding to predetermined processing instructions to said computer and an image based on a primary image signal supplied from said computer, it thereafter reads, by the use of a read means of said copying apparatus, optical marks on the recording paper having





the composite image formed thereon and then, supplies the instruction signals to said computer means, said computer means producing a secondary set of image signals after executing, in response to the instruction signals, the predetermined processing of the primary image signals and making an output of the secondary image signals at the time of a subsequent copying operation.

4,494,863

CLEANING APPARATUS FOR A CHARGE RETENTIVE SURFACE

John R. Laing, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1983, Ser. No. 517,151

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **31 Claims**

1. Printing apparatus including:

a charge-retentive surface;

latent image forming means;

means for forming a toner image;

development means;

transfer means;

means for removing residual toner and debris from said charge-retentive surface;

said image forming, development, transfer and toner removing means being positioned adjacent said charge-retentive

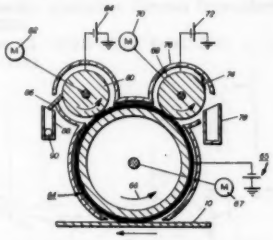
surface so that sections of said charge-retentive surface can be moved therepast in that order;

said residual toner and debris removing means comprising:

a brush supported for rotation and contact with said surface for removing residual toner and debris therefrom;

a first detoning member supported for contact with said brush;

a second detoning member supported for contact with said brush; and



means for electrically biasing said brush and said first and second detoning members to thereby establish an electrostatic field between said brush and each of said detoning members; said electrical biasing means being such as to cause one of said detoning members to attract toner from said brush and the other of said detoning members to attract debris therefrom.

4,494,864

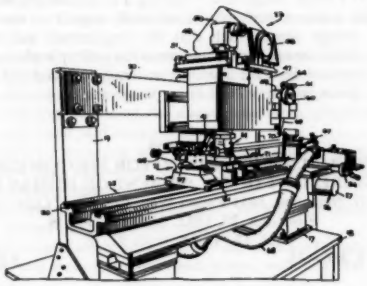
APPARATUS FOR STEREOSCOPIC PHOTOGRAPHY

Edgar C. Smith, Long Island City, and James B. Campbell, New York, both of N.Y., assignors to The Three Dimensional Photography Corp., Yonkers, N.Y.

Division of Ser. No. 864,748, Dec. 27, 1977,. This application Aug. 13, 1979, Ser. No. 65,959

Int. Cl.³ G03B *27/32, 35/14, 27/62, 27/64*

U.S. Cl. 355—22 **25 Claims**



1. An apparatus for the processing of a plurality of film image frames comprising

stable means for supporting a carriage assembly means, the carriage assembly means being movable on the stable means and supporting the film image frames,

optical means on the stable means for optical viewing at least two image frames and determining a base distance between the image frames and means for causing a mark to be placed on each of the plurality of frames as the carriage assembly means is moved in accordance with the base distance.

4,494,865

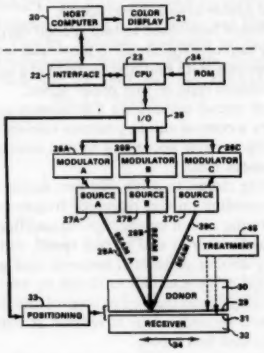
PROVIDING PATTERNS

Paul G. Andrus, Powell; B. Thomas Smith, Upper Arlington, and Thomas M. Dolash, Worthington, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 13, 1982, Ser. No. 449,365

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—32 **38 Claims**



1. Apparatus for providing patterns of materials, comprising

a support member having a plurality of groups of surface areas, with each surface area in a given group facing generally in a predetermined direction that is different from the direction faced by the surface areas in any other group,

the surface areas in each group having an energy-modifiable material adjacent thereto,

means for directing energy onto the material adjacent to the surface areas in each group in such manner as to substantially modify some of the material without substantially modifying the material adjacent to the surface areas of the other groups, and

means for positioning a receiver member with a surface thereof adjacent to the groups of surface areas, so as to transfer a substantial proportion either of the modified materials or of the remaining unmodified materials to the receiver surface to form the desired patterns thereon.

4,494,866

APPARATUS FOR SCANNING AN ORIGINAL FOR COPIERS HAVING A VARIABLE REDUCING/ENLARGEMENT RATIO

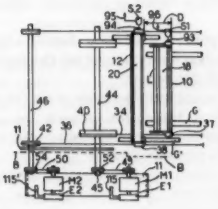
Luciano Rattin, Ivrea, and Amerigo Vigliermo, Baio Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 13, 1982, Ser. No. 449,388

Claims priority, application Italy, Dec. 21, 1981, 68650 A/81

Int. Cl.³ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **6 Claims**



2. Apparatus for scanning a fixed original to be copied on a

copying machine with different reduction/enlargement ratios comprising

first and second mirror carriages independently movable in the same direction parallel to said original to direct the scanned original image toward a rotatable image receptor,

a first motor connected to said first carriage to move it at a preset speed according to a selected reduction/enlargement ratio,

a control circuit responsive to said selected ratio to activate said first motor at said preset speed,

a second motor connected to said second carriage and activated by said control circuit to move said second carriage simultaneously with said first carriage at a second speed in predetermined ratio to said preset speed,

said control circuit comprising a frequency generator controlled by a control unit to generate reference frequencies selectively variable according to said selected reduction-/enlargement ratio,

a first driving circuit to drive said first motor at said preset speed depending on said reference frequencies,

a second driving circuit independent of said first one to drive said second motor at said second speed, and

a frequency divider connected between said generator and said second driving circuit to divide by two each of said selected frequencies thereby to control said driving circuit so that said second motor is rotated at half speed with respect to said first motor,

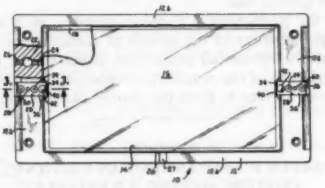
whereby said second carriage travels at said second speed simultaneously with said first carriage to scan said original irrespective of the variations of said preset speed.

4,494,867

PIN MOUNTING PLATE FOR VACUUM FILM HOLDERS

Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Opti-Copy, Inc., Lenexa, Kans.

Filed Jul. 18, 1983, Ser. No. 514,634
Int. Cl.³ G03B *27/60*
U.S. Cl. 355—73 **19 Claims**



1. An arrangement for mounting a registration pin at a preselected location on a vacuum film holder having a frame presenting an opening and a recessed shelf around the opening, a transparent panel seating on the shelf to cover the opening, and a vacuum channel extending around the panel for applying vacuum to the film to hold same flatly against the panel, said arrangement comprising:

means providing a recess in the frame adjacent the vacuum channel;

a notch in the panel at a location aligned with said recess and adjacent the vacuum channel on the opposite side of the channel from the recess;

a plate having a size to fit partially in said recess and partially in said notch to bridge the vacuum channel;

means for mounting the registration pin on said plate to project from one side thereof;

an aperture in the frame at a location within said recess;

a locator pin for insertion in said aperture; and

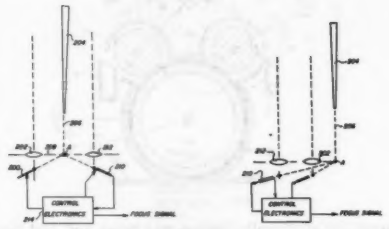
means for mounting said locator pin on said plate to project from the side thereof opposite said one side at a location to position said registration pin at said preselected location when said plate is inserted in said recess and notch with said locator pin received in said aperture.

4,494,868

RANGEFINDER DEVICE WITH FOCUSED ELONGATED LIGHT SOURCE

David N. Lambeth, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,260
Int. Cl.³ G01C *3/10*; G03B *7/08*
U.S. Cl. 356—1 **14 Claims**



1. A rangefinder device, comprising:

(a) means for illuminating a spot on an object in a scene, including:

(1) an elongated light source having a longitudinal axis, and

(2) a first lens positioned with respect to the elongated light source such that the longitudinal axis of the light source intersects the principle plane of the first lens for projecting a real image of said light source, said real image defining an elongated beam region extending generally parallel to and displaced from the optical axis of the lens whereby an object located in said beam region will be illuminated with a spot of light having an in-focus component; and

(b) means for viewing the scene to determine the distance to the object by detecting the apparent location of the in-focus component of the illuminated spot in the scene, including:

(1) a linear image sensor having a longitudinal axis, and

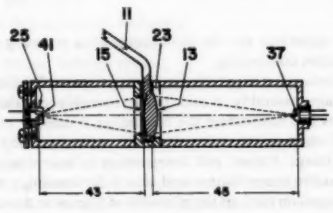
(2) a second lens positioned with respect to the linear image sensor such that the longitudinal axis of the linear image sensor intersects the principle plane of the second lens for forming an image of said elongated beam region on said linear image sensor.

4,494,869

APPARATUS AND METHOD FOR PHOTOMETRIC MEASUREMENT OF OIL PRESENT ON HUMAN SKIN

Hans D. Neumann, 1011 Parma Way, Los Altos, Calif. 94022

Filed Jun. 22, 1982, Ser. No. 391,078
Int. Cl.³ G01N *1/10, 33/26*
U.S. Cl. 356—36 **5 Claims**



4. Apparatus for sampling the oiliness of the skin, comprising

a sampling pellet having optically smooth opposing surfaces, one of said surfaces being brought into contact with the skin to transfer oil from the skin to that surface and at least one of said surfaces being a curved surface.

4,494,870

ARRANGEMENT FOR SETTING OUT POINTS AND STRAIGHT LINES

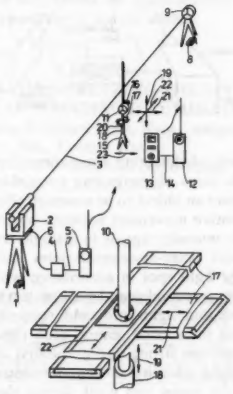
Peter Hentschel; Wolfgang Meyl, and Egon Seipelt, all of Dresden, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed May 14, 1981, Ser. No. 263,785

Claims priority, application German Democratic Rep., Jun. 30, 1980, 222231

Int. Cl.³ G01B *11/26*; G01C *3/08, 15/02*

U.S. Cl. 356—152 **3 Claims**



1. An arrangement for setting out terrain points and straight lines comprising

a tacheometer for emitting a measuring beam and detecting the same,

said tacheometer being stationed at a first end point of a straight line,

a first reflector for marking a second end point of said straight line,

a second reflector for setting out a terrain point on said straight line,

said first reflector being for reflecting said measuring beam to said tacheometer, said tacheometer being for detecting the intensity of the reflected measuring beam and for measuring the distance between said first end point and said second reflector,

means for converting said intensity and said distance measured into measuring signals and for transmitting said measuring signals,

said means for converting and transmitting being connected to said tacheometer,

an interrupter attached to said second reflector for interrupting said measuring beam and, hence, reducing said intensity,

a tripod vertically adjustable,

a cross-slide for horizontal displacements,

said cross-slide being attached to the upper portion of said tripod,

said interrupter and said second reflector being seated on said cross-slide,

said tripod and said cross-slide being for displacing said interrupter and said second reflector at right angles and in parallel to said measuring beam,

a measuring signal detector being stationed at the terrain point to be set out and being for detecting said measuring signals transmitted from said means for converting and transmitting,

an indicating means being connected to said signal detector, for indicating said measuring signals and variations of said measuring signals at displacements of said interrupter and said second reflector.

4,494,871

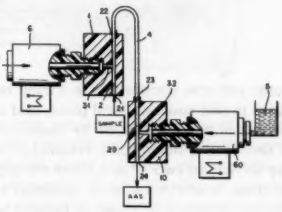
DEVICE FOR PULSE DOSAGE OF LIQUID MICROSAMPLES INTO THE FLAME OF ATOM ABSORPTION SPECTROPHOTOMETER

Lyubomir P. Futekov; Georgi L. Bekyarov, and Rina G. Parichkova, all of Plovdiv, Bulgaria, assignors to Nauchno-Proizvodstveno Predpriyatie "Balkan", Plovdiv, Bulgaria

Filed Nov. 18, 1981, Ser. No. 322,544

Int. Cl.³ G01N *21/72*

U.S. Cl. 356—315 **4 Claims**



1. In an atomic absorption spectrophotometer provided with a flame liquid sample atomizer, and a source of a liquid sample to be analysed, the improvement which comprises:

a three-way distributor having a throughgoing passage interconnecting a pair of ports, and a further passage opening into said throughgoing passage between said pair of ports;

means connecting one of the ports of said pair to said source;

means for connecting the other port of said pair to said atomizer;

an electromagnetic valve connected to said further passage for admitting air through said further passage to said throughgoing passage, the means connecting said other port to said atomizer including a second three-way distributor having a throughgoing passage communicating between said other port and said atomizer and a further passage opening into said throughgoing passage, communicating with a supply vessel for a solvent and provided with a second electromagnetic valve for closing the further passage, said second distributor being located at a level below the first distributor.

4,494,872

MULTIPLE ENTRANCE APERTURE DISPERSIVE OPTICAL SPECTROMETER

Kenneth W. Busch, Waco, Tex., assignor to Baylor University, Waco, Tex.

Continuation-in-part of Ser. No. 195,210, Oct. 17, 1980, Pat. No. 4,375,919, which is a continuation of Ser. No. 33,235, Apr. 25, 1979, abandoned. This application Mar. 24, 1982, Ser. No. 361,264

Int. Cl.³ G01J *3/20*

U.S. Cl. 356—328 **35 Claims**

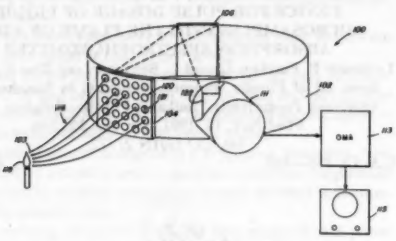
1. An optical fiber polychromator comprising:

an optical arrangement including entrance means for admitting light radiation into an entrance focal plane, display means located at a predetermined exit focal plane, and spectrum means for separating said radiation into spectral components determined by the position at which said radiation is admitted into said entrance plane and for focusing said spectral components on said display means;

a plurality of optical fibers, each of said optical fibers having

one end positioned near a light source and the other end positioned adjacent to said entrance focal plane for guiding radiation to said entrance plane; and

means included in said entrance means for retaining the end of each of said optical fibers nearest said entrance plane in any one of a plurality of locations in a predetermined array, each of said locations in said array being defined by



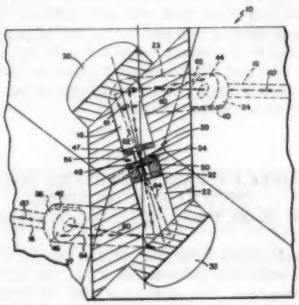
column and row coordinates in a fixed rectilinear matrix located in said entrance focal plane, said column and row coordinates being separated by predetermined distances and said optical fibers being retained at locations of said array so that no two of said fibers are aligned within the same row, whereby radiation admitted by said fibers is displayed at said exit plane in parallel non-overlapping spectral bands.

4,494,873

ELECTROMAGNETIC WAVE REFLECTIONS ABSORBER

Michael Perlmutter, Sherborn, and Lawrence L. Clampitt, Wayland, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 17, 1981, Ser. No. 235,320
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **9 Claims**



1. In combination:

means for producing a plurality of counter-traveling electromagnetic waves within a closed path with a gain medium;

means for producing a direction-dependent phase shift to said waves resulting in a frequency splitting between said counter-traveling waves; and

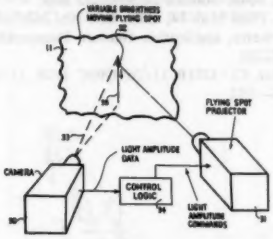
means for absorbing electromagnetic waves reflected from said direction-dependent frequency splitting means, said absorbing means comprising a conical shield with a light wave absorptive coating deposited on said shield.

4,494,874

DETECTION OF THREE-DIMENSIONAL INFORMATION USING A PROJECTED POINT OR LINE OF LIGHT

Paul DiMatteo, Huntington, and Joseph Ross, Fort Salonga, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Jul. 7, 1981, Ser. No. 281,068
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—376 **6 Claims**



1. A method of detecting three-dimensional information, comprising the steps of: projecting a variable-intensity flying spot of light onto an object to be scanned; effecting a first scan by causing relative movement between object and light spot; receiving light-intensity signals in a single reflected light ray from the object point-by-scanned-point and modifying the intensity of the light spot in accordance with each received signal; effecting a second scan by causing relative movement between object and light spot; and reducing the light-spot intensity during the second scan at such points of the object where the signal was strong during the first scan, and increasing the light-spot intensity during the second scan at such points where the signal was weak during the first scan, said steps of effecting a first scan and a second scan comprising measurements of a multiplicity of points independent of light intensity at the object, so that accuracy of said measurements is not influenced by the light intensity at the object, the light-spot intensity during said second scan being dependent on said light-intensity signals of said first scan for preventing inaccuracy due to measurement delay and lag in modifying by a distance equal to scan velocity multiplied by measurement delay time.

4,494,875

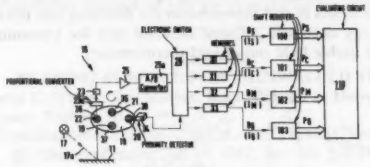
METHOD AND APPARATUS FOR MONITORING AND EVALUATING THE QUALITY OF COLOR REPRODUCTION IN MULTI-COLOR PRINTING

Peter Schramm, Kahl, and Walter Feulner, Puchheim, both of Fed. Rep. of Germany, assignors to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 278,560, Jun. 29, 1981, abandoned. This application Dec. 9, 1981, Ser. No. 328,864
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024773
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—402 **20 Claims**

10. Apparatus for automatically examining a color control strip which is imprinted on a sheet-like carrier in a multi-color printing machine and contains a series of neighboring patches in a plurality of different colors, comprising means for sensing color-dependent properties of successive patches of the strip and for generating a plurality of signals during scanning of each patch; means for effecting a relative movement between the strip and said sensing means; a plurality of memories, one for each of said different colors and each arranged to store a predetermined number of signals transmitted by said sensing means and pertaining to the respective color as well as to

eradicate the oldest stored signal on reception of a fresh signal so that, once the memories receive predetermined numbers of



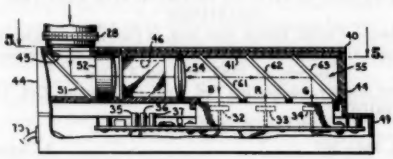
signals, the number of stored signals in each of said memories remains unchanged; and means for automatically evaluating said predetermined numbers of stored signals.

4,494,876

INTEGRATOR FOR ANALYZING THE SPECTRAL CONTENT OF PRINTING ILLUMINATION

Henri Van Wandelen, Overland Park, Kans., assignor to Bremson Data Systems, Inc., Lenexa, Kans.

Filed Feb. 17, 1982, Ser. No. 349,460
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—404 **24 Claims**



3. An integrator for analyzing the spectral content of printing illumination, which comprises:

(a) a first color separation filter for diverting a first color from an optical path of the printing illumination;

(b) a second color separation filter receiving said printing illumination from said first color separation filter and diverting a second color from said optical path;

(c) a first phototransducer receiving said first color and providing a signal representative of the intensity thereof;

(d) a second phototransducer receiving said second color and providing a signal representative of the intensity thereof;

(d) a third phototransducer receiving a third color passing through said second color separation filter and providing a signal representative of the intensity thereof;

(f) a density classifier; and

(g) a specular filter angularly disposed in the optical path of said printing illumination and diverting a portion thereof to said density classifier.

4,494,877

FUNNEL MEMBER FOR SINGLE-SCREW EXTRUDER

Hartmut Upmeier, and Thilo Schreiber, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,375
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227443
Int. Cl.³ B28C *7/04;* **B29F** *3/02*
U.S. Cl. 366—76 **7 Claims**

1. A single-screw extruder comprising:

a housing;

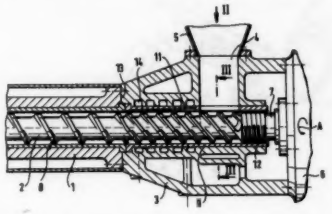
a sleeve defined by said housing;

a feed screw mounted within said sleeve;

an eccentric filling aperture defined by the housing being positioned tangentially to said feed screw;

a plurality of grooves defined by said housing being in communication with said sleeve and extending parallel to the longitudinal axis of said sleeve, said plurality of grooves decreasing in depth along the longitudinal axis of the sleeve;

a first zone of said sleeve positioned adjacent to said eccentric filling aperture wherein said plurality of grooves are spaced about the circumference of said sleeve; and



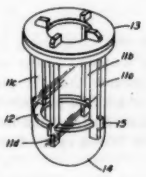
a second zone of said sleeve including said eccentric filling aperture wherein some of said plurality of grooves are spaced about a portion of the circumference of said sleeve, said portion of the circumference of the sleeve extending from one edge of the eccentric filling aperture to a point radially opposite to the one edge of the eccentric filling aperture.

4,494,878

FASTENER-FREE BAFFLE ASSEMBLY SYSTEM

Charles E. Rainey, Jr., North Richland Hills, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Filed Jul. 14, 1983, Ser. No. 513,770
Int. Cl.³ B01F *7/00;* **B01J** *14/00*
U.S. Cl. 366—341 **11 Claims**



1. A removable, fastener-free, baffle assembly for use with agitated vessels, said baffle assembly comprising:

(a) an upper support member adapted to rest upon the upper surface of the mouth of said vessel,

(b) a plurality of baffle members forming a fastener-free interlock with said upper support member, and depending therefrom

(c) a lower stabilizing ring forming a fastener-free interlock with said baffle members at a point along the lower half of said members and along the interior sides of said members.

4,494,879

OPERATING ARRANGEMENT FOR AN ELECTRO-MECHANICAL CHRONOMETER

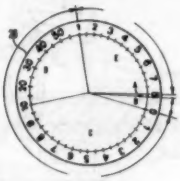
Alfred Meisner, Nuremberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,360

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337574

Int. Cl.³ G04B *19/00*; G04F *8/00*

U.S. Cl. 368—76 **9 Claims**



1. In an operating arrangement for a chronometer including an analog display with at least one indicator element, such as for a microchronometer or a microswitch, wherein the indicator element is driven at a rotational speed which is dependent upon the display position; the improvement comprising an electro-mechanical transducer forming a driving element; and switch means controlled in dependence upon the display position operative in one of at least two different pulse frequencies, wherein said switch means actuates said transducer in dependence upon the position of the analog display.

4,494,880

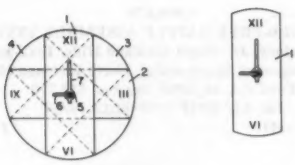
FOLDABLE CLOCK DIAL

Wen-Kuang Su, 11th Fl. No. 56 Nan-King E. Rd. Sec. 4, Taipei, Taiwan

Filed Mar. 14, 1984, Ser. No. 590,022

Int. Cl.³ G04B *19/06*

U.S. Cl. 368—232 **6 Claims**



1. A foldable clock dial comprising a plurality of plates adapted to be coaxially mounted on the axle sleeve of a clock movement in such a manner that the plates can be rotated about the axle sleeve into a first position to form a complete dial having a predetermined shape, and into a second position in which the plates are folded up to form a small, compact package.

4,494,881

INTRA-OPTICAL LIGHT BEAM SIGHTING SYSTEM FOR AN INFRARED THERMOMETER

Charles E. Everest, 11662 Pincian Way, Santa Ana, Calif. 92705

Filed Mar. 10, 1982, Ser. No. 356,869

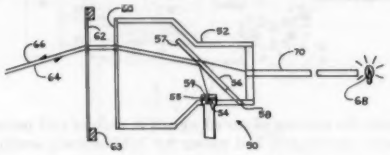
Int. Cl.³ G01J *5/08*

U.S. Cl. 374—124 **5 Claims**

1. In an infrared thermometer of the transportable type, housing an infrared detector for generating a signal representative of the infrared energy transmitted to the thermometer from an object of which the temperature is to be measured and having a display for indicating the measured temperature; the improvement comprising:

a source of visible light contained within said thermometer,

an optical lens apparatus having equal effective spaced aperture means in said thermometer for directing said infrared energy onto said infrared detector and for transmitting said visible light out of said thermometer,



the beam of infrared energy and visible light being congruent between said thermometer and said object whereby a visible intersection of the infrared field of view of the thermometer with said object is provided, and

means separating said light source from said detector preventing said visible light from being incident on said infrared detector.

4,494,882

SELF-PUMPING THRUST BEARING FOR ELECTRIC MACHINES

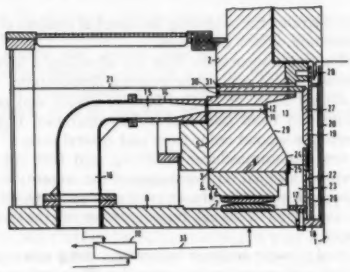
Hans-Jurgen Pollok, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,865

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3141061

Int. Cl.³ F16C *17/06, 17/00, 33/10*

U.S. Cl. 384—307 **3 Claims**



1. A self-pumping thrust bearing for electric machines having a vertical shaft comprising a rotating thrust ring, a thrust ring cup in which the thrust ring is disposed, an oil space between the thrust ring and the vertical shaft disposed above a bearing gap, a first set of approximately radially-extending bores in the rotating thrust ring in communication with the oil space, a ring canal arranged in a stationary part adjacent to the thrust ring into which the first set of radial bores open, the first set of radial bores being operative upon rotation of the thrust ring to suck oil from the oil space and feed it to the ring canal from which the oil is fed to at least one cooler and then returned to the thrust bearing cup, the thrust bearing cup including at least one stationary cylinder wall which is adjacent to the vertical shaft, a rotating cylinder wall disposed adjacent the stationary cylinder wall on the side thereof facing the oil space, the rotating cylinder wall beginning at the thrust ring and extending to the oil space, the oil space being enlarged by a recess extending at least to the first set of radial bores on the inside of the thrust ring, the first set of radial bores opening

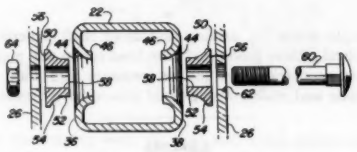
into the oil space adjacent the top of the recess, and a second set of approximately radially-extending bores provided in the thrust ring above the first set of radial bores, the second set of radial bores being in communication with the thrust bearing cup opening into the oil space in or above the recess enlarging the oil space and below a top end of the rotating cylinder wall for removing foamed oil and air from the oil space.

4,494,883

BEARING SURFACE FOR THINWALLED TUBE

David C. Winter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 278,524, Jun. 29, 1981, abandoned.
This application Jul. 29, 1983, Ser. No. 518,316
Int. Cl.³ F16C *35/02, 33/08*
U.S. Cl. 384—439 **11 Claims**



1. In a hollow elongated tubular link for an agricultural implement, the link adapted for sandwiching between a pair of plates and including parallel opposed sidewalls each having a thickness substantially less than the distance between the sidewalls and transverse walls connecting the sidewalls, pivot bearing structure comprising: a pair of circular axially aligned seats formed integrally with and recessed inwardly from the opposed sidewalls, each seat having a radius substantial compared to the dimension of the sidewall perpendicular to the axis of the link, a pair of individual one-piece bushings pressed into and non-rotatably supported in the respective seats, said bushings having axially aligned bores, wherein each bushing includes an axially outermost end flush with or slightly recessed with respect to the corresponding sidewall, a flared rim portion adjacent the outermost end, an inner cylindrical portion having a diameter less than the rim portion, and an axially inwardmost end located inwardly of the sidewall, wherein each corresponding seat includes a rounded portion extending inwardly from the sidewall for receiving the flared portion closely adjacent the transverse connecting walls and an inner portion extending axially inwardly from the sidewall for receiving the cylindrical portion, said rounded portion cooperating with the flared portion to secure the latter against rocking and axial motion with respect to the sidewalls so that said inwardmost ends are axially spaced a fixed distance apart, and pivot pin means mounted for rotation with respect to the bushings extending through the bores and connected to the plates for maintaining the plates parallel and closely adjacent the link sidewalls while permitting the link to pivot with respect to the plates.

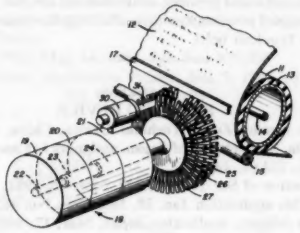
4,494,884

SPOKED MULTIPLE-WHEEL PRINTER

Herman H. Lowell, P.O. Box 3128, Silver Spring, Md. 20901

Filed Nov. 4, 1982, Ser. No. 439,274
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **19 Claims**

1. In a high speed line printer having a platen, a print element assembly, and hammer means for moving a selected print element of the print element assembly toward the platen, the improvement comprising; said print element assembly consisting of a plurality of individual print wheels axially fixed with regard to said platen, each wheel having a plurality of radial character carrying spokes, said wheels being axially spaced from each other, separate electric motors for each print wheel adapted to rotate its respective wheel so that a selected spoke is in alignment with the hammer means for actuation thereby, at least one radial gap between a pair of spokes in each print wheel, said gaps of all but the wheel closest to said hammer means having at least a width of one spoke and adapted to allow entry therethrough of either the hammer means or a spoke from a successive spaced print wheel, the wheel closest to said hammer means having a gap width sufficient to allow



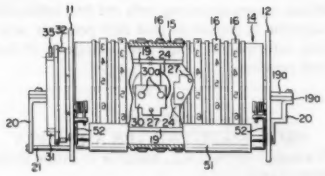
passage therethrough of said hammer means, character selection means for selectively actuating one or more of the motors for rotating its associated print wheel to align a selected spoke on one wheel with the hammer means and gaps on the remaining wheel or wheels with the hammer means, and means for actuating the hammer means to drive the selected spoke to impact the character thereon against the platen to effect printing.

4,494,885

COMPACT PRINTER

Satoshi Watanabe; Toru Wakasawa; Hirofumi Hirano, and Hiroshi Nishizawa, all of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Chichibu, both of, Japan

Continuation of Ser. No. 155,157, May 30, 1980, abandoned.
This application Aug. 11, 1982, Ser. No. 407,296
Claims priority, application Japan, Jun. 4, 1979, 54-69664; Jun. 4, 1979, 54-69665; Jun. 4, 1979, 54-69666; Jun. 5, 1979, 54-70411; Jun. 29, 1979, 54-82373; Aug. 10, 1979, 54-102625
Int. Cl.³ B41J *9/12, 1/18, 1/20*
U.S. Cl. 400—145.2 **12 Claims**



1. A compact printer comprising a typefont wheel provided with printing types and an ink roller for applying printing ink to said printing types, said typefont wheel including a support, a plurality of typefont belts mounted on said support to define plural columns of printing types, each belt being made of an elastic member and having integrally formed on one side thereof a plurality of said printing types and on the other side thereof a plurality of positioning projections, each printing type being associated with a separate positioning projection and the printing types on adjacent typefont belts being arranged in a staggered fashion, said support having a plurality of apertures, wherein adjacent positioning projections on each typefont belt are spaced apart by a distance slightly less than the distance between corresponding apertures on said support, said projections being positioned within the apertures to mount

each of said typefont belts on said support under tension over substantially the entire belt, and impact means disposed within said support and including at least one hammer dimensioned to impact types on a plurality of adjacent typefont belts from inside said support by striking the associated projections, wherein the staggered arrangement of types on adjacent typefont belts is such that at any time said hammer can only strike one projection of one of the adjacent typefont belts to transmit an impact force to the associated printing type thereby ensuring rapid and exact printing, and return of the one typefont belt to its original position without affecting the printing types of adjacent typefont belts.

4,494,886

PRINTING DEVICE

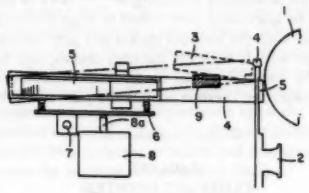
Hiroatsu Kondo, Zushi; Toshiaki Ozawa, Chiba, and Yasuaki Yamada, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 242,348, Mar. 10, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 462,006

Claims priority, application Japan, Mar. 17, 1980, 55-33590

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **4 Claims**



1. A printing device comprising:

a cassette for housing an ink ribbon and having a first area for indicating a first information concerning said ink ribbon and having a second area for indicating a second information concerning the ink ribbon;

means for shifting said cassette between a first position and a second position; and

detecting means fixedly positioned and selectively facing either one of said first and second areas in said first and second positions and capable of detecting changes in kinds of the first and second information to be detected, said detecting means detecting only the first information when the cassette is shifted to said first position, and only the second information when the cassette is shifted to said second position.

4,494,887

HIGH SPEED PRINTER ASSEMBLY

Karl T. Wincent, Tiverton, R.I., assignor to Litton Systems, Inc., Fall River, Mass.

Filed Jan. 10, 1984, Ser. No. 569,578

Int. Cl.³ B41J *19/80, 33/18*

U.S. Cl. 400—568 **12 Claims**

1. A high speed printer including a movable print head used for printing lines of information on a record carrier, said high speed printer comprising:

a molded base having a plurality of plastic towers integrally molded thereon,

a cylindrical platen mounted on two of said plastic towers for supporting said record carrier,

a platen drive gear mounted on one end of said platen,

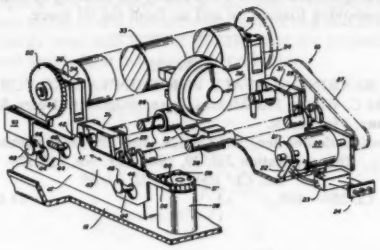
a drive shaft having a helical groove along the length thereof and an eccentric drive pin at one end,

a pair of plastic towers supporting said drive shaft,

a movable carriage supporting said print head and having means for following said helical groove,

a slide bar mounted for reciprocating motion and having a drive slot for receiving said eccentric drive pin,

platen drive means on said slide bar for selective engagement with said platen drive gear, and



a single motor for driving said drive shaft, whereby said helical groove drives said print head across said platen and said eccentric drive pin reciprocates said slide bar to rotate said platen through said platen drive means.

4,494,888

WEFT INSERTING METHOD AND APPARATUS FOR AN AIR JET LOOM

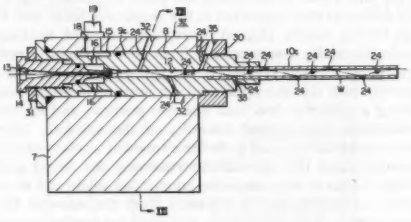
Hiroshi Honda, and Mitsuru Hasegawa, both of Kariya, Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Jul. 22, 1982, Ser. No. 400,663

Claims priority, application Japan, Jul. 27, 1981, 56-117287; Aug. 6, 1981, 56-117028[U]; Aug. 6, 1981, 56-117029[U]

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **15 Claims**



1. A method for inserting a weft into the warp shed of an air jet loom by compressed air discharged from a weft passage of an ejection nozzle, characterized in that the weft is inserted into said weft passage centrally thereof and passes through said weft passage while deviating from the axis of said weft passage at least along a portion thereof.

4,494,889

SHAFT BUSHING AND HUB ASSEMBLY

Dennis R. Thompson, Weaverville, N.C., assignor to Reliance Electric Company, Greenville, S.C.

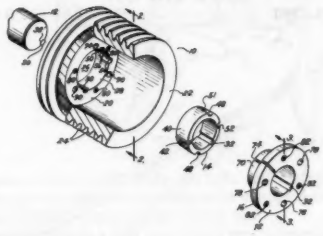
Filed Jul. 14, 1983, Ser. No. 513,623

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—4 **17 Claims**

1. A bushing and hub assembly for mounting a machine element on a shaft, comprising a hub having an axial bore with side walls tapered from one end of the hub bore to the other end, a first bushing having a frustoconically shaped body for seating in the bore of said hub, means defining spaced holes at the interface of said bushing and hub with screw threads in the portion of the holes in said hub, screws for threaded engagement with the screw threads in the hub hole portion and in

abutting relationship with the inner end of the bushing hole portion, a second bushing interchangeable with said first bushing having a frustoconically shaped body for seating in the bore of said hub and having a radially extending annular flange on the larger end of the body and being adapted to extend radially along one end of said hub, a plurality of threaded holes in the end of said hub adjacent said flange extending in axial



parallel relationship with the bore and being spaced radially outwardly from said bore, a plurality of plain holes extending through said flange for alignment with said threaded holes in the end of said hub, and screws for extending through the holes in said flange and into the holes in the end of said hub, said bushing bodies having the same taper as the taper of the side walls of said hub and having a radial and axially disposed slit extending the length of the respective bushings.

4,494,890

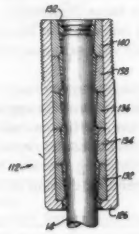
MULTI-WEDGE CONNECTOR

George E. Lusk, Woodstock, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Division of Ser. No. 576,731, May 12, 1975,. This application Dec. 2, 1980, Ser. No. 212,237

Int. Cl.³ B25G *3/34*; F16B *11/00*

U.S. Cl. 403—267 **17 Claims**



1. A sucker rod string comprising

a plurality of resin bonded, glass reinforced sucker rods,

means for serially interconnecting said plurality of sucker rods, said interconnecting means comprising

elongated means having a predetermined, elongated, interior profile configuration defined by an interior surface adapted to be positioned about an elongated end portion of said rod in a spaced apart relationship for transmitting a tensile force to said rod, said interior profile configuration defining a cross sectional area that is nonuniform along the longitudinal axis of said elongated means,

means adapted to be disposed between said interior surface and said rod for filling substantially all of the spaces or voids between said interior surface and said rod to thereby affix said end fitting to said rod, and

means adapted to coat said interior surface for avoiding the development of a bond between said interior surface and said filling means.

4,494,891

GRATING FOR A HIGHWAY CONSTRUCTION IN PARTICULAR FOR A SEWER OPENING

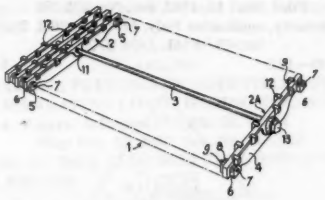
Jean-Claude Hauer, Saulxures lès Nancy, and Jacques Oger, Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., France

Filed May 14, 1982, Ser. No. 378,304

Claims priority, application France, Jun. 5, 1981, 81 11188

Int. Cl.³ E03F *5/06*

U.S. Cl. 404—4 **7 Claims**



1. A grating for highway construction, in particular for a sewer opening, of the type comprising a series of transversal elements (2) connected by at least one longitudinal clamping crosspiece (3), said grating comprising only a single central crosspiece (3), the transversal elements (2) having reciprocal abutting surface means, in the form of surfaces (5) capable of sliding vertically relative to each other, for eliminating rocking of the grating when it is supported on a frame and subjected to rolling loads, and wherein each transversal element (2) comprises means (7, 9) for limiting, but still permitting, the relative sliding of said abutting surfaces (5).

4,494,892

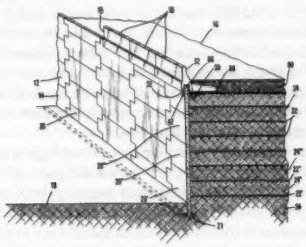
TRAFFIC BARRIER, BARRIER ELEMENT AND METHOD OF CONSTRUCTION

Longine J. Wojciechowski, Potomac, Md., assignor to Henri Vidal, France

Filed Dec. 29, 1982, Ser. No. 454,412

Int. Cl.³ E01F *15/00*

U.S. Cl. 404—6 **14 Claims**



9. A traffic barrier element, comprising: a block of precast concrete having a side with a profile for redirecting an incident vehicle away from the side, a bottom surface with a longitudinally extending channel proportioned to receive a wall edge, the channel defined by a depth which exceeds its width, the channel providing an internal face for supporting the barrier element and defining an inner lip and an outer lip on opposite sides of the channel with the inner and outer lips being adapted to straddle the wall edge and being operable to resist overturning of the barrier element due to a camming effect between the outer lip and the wall upon any impact which rotates the block, and anchoring means being partially imbedded within the

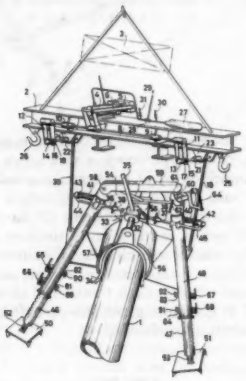
block and partially projecting from the inner lip, whereby the block can be supported by the channel and can be connected to a counterweight by the anchoring means.

4,494,893

ADJUSTABLE APPARATUS FOR SUPPORTING AN UNDERWATER PIPE LAID AT GREAT DEPTH OVER A DEPRESSION IN THE SEA BED

Enrico Migliavacca, S. Giuliano Milanese, Italy, assignor to Snam S.p.A., Milan, Italy

Filed Mar. 15, 1983, Ser. No. 475,399
Claims priority, application Italy, Mar. 19, 1982, 20263 A/82
Int. Cl.[3] F16L *1/04, 3/00*
U.S. Cl. 405—172 5 Claims



1. An adjustable apparatus for supporting an underwater pipe suspended over a depression in a sea bed of great or medium depth, having an upper floating structure which enables the apparatus to be introduced into the sea bed and mounted over the pipe to be supported, and a lower structure which includes a pair of telescopic legs able to rest on the sea bed, and a pair of half saddles for supporting the pipe,

said upper structure, having a main beam and a buoyancy tank fixed thereto, wherein said main beam is provided with a device for releasing the cables connected to said beam in order to support the lower structure during the introduction of the apparatus into the sea and the mounting of the apparatus over the pipe, and a pair of hooks for recovering said lower structure,

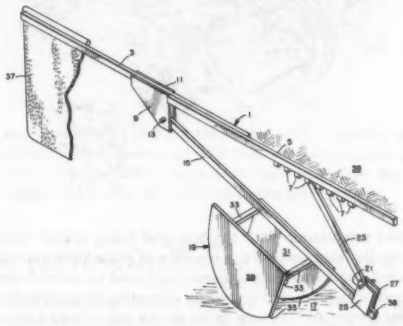
said lower structure having a pair of fixed legs, a pair of half saddles for supporting the pipe, each rigidly mounted at a defined distance from said fixed legs, a pair of mobile legs each provided with a base plate and housed inside the fixed legs such that once the half saddles are resting on the pipe said mobile legs can slide downward until they lie on the sea bed where they are then locked to said fixed legs, a pair of plates rigidly connected on one end to the upper ends of the fixed legs and connected together at the opposite end in such a manner as to enable said plates to rotate relative to each other in the same plane, a pin positioned perpendicular to said plates having a length which extends beyond said plates, wherein said pin has a guide saddle at one end thereof, the purpose of which facilitates the coupling of the half saddles for supporting the pipe while being placed underwater, and a strut hinged to one of said plates which locks the rotary movement of the leg connected to the other plate.

4,494,894

EXTENSIBLE BRATTICE SUPPORT SYSTEM FOR MINE FACE VENTILATION

Edward F. Divers; John C. Lascola, and Robert G. Behers, all of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,294
Int. Cl.[3] E21F *1/14*
U.S. Cl. 405—290 9 Claims



1. A mobile extensible brattice support system for use with an underground mine ventilation system comprising:

an upper elongated support assembly having a cantilevered inby end and an outby end extending in the same general direction as the directed flow of air, said assembly having height adjustment indexing members on its lower side nearer the outby end thereof;

an air impervious depending curtain extending along the longitudinal extent of said assembly in the direction of directed air flow;

a first rigid inclined support member pivotally joined to said first member at one end, said first member having a lower foot engaging section near its other end;

a second rigid inclined support member pivotally joined to said first member at one end and having a free end on its other end engageable with said assembly's indexing members; and

a movable mine floor engaging fulcrum to support said first rigid member whereby upon the application of a downward foot pressure on the first member's foot engaging section the free end of the second member may be inserted into the assembly's indexing member to raise and fix the assembly and its depending curtain into engagement with the mine's roof.

4,494,895

PORTABLE DRILL PRESS MECHANISM

Arthur L. Leaf, 1009 Villa Ave., San Jose, Calif. 95126

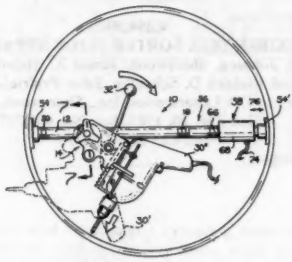
Filed Feb. 7, 1983, Ser. No. 464,200
Int. Cl.[3] B23B *45/14*
U.S. Cl. 408—236 13 Claims

1. A portable drill press mechanism for an electric hand drill comprising:

an elongated support post having a longitudinal axis;

a drill support assembly including a body portion, a swivel member provided with a transverse bore through which said post may extend, first pivot means for pivotally attaching a first end of said swivel member to said body portion, set screw means including a threaded stud having a first end engaged with a threaded bore provided in a second end of said swivel member where said stud may cooperate with said pivot means to allow rotation of said swivel member, said set screw means further including handle means attached to a second end of said stud such

that rotation of said handle may cause said first end of said stud to engage a portion of said post disposed within said bore, carriage means attached to said body portion, a carriage actuating mechanism for moving said carriage



means relative said body portion, and clamping means attached to said carriage means for clamping said electric hand drill to said carriage means; and

means attached to a first end of said post to engage a surface of a work piece.

4,494,896

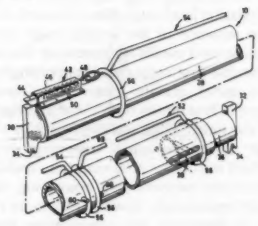
SUPPORT BAR

Dioniso DiFranco, Oakville, Canada, assignor to Peel Truck & Trailer Repair Ltd., Mississauga, Canada

Filed Jan. 24, 1983, Ser. No. 460,278

Int. Cl.³ B61D *45/00*

U.S. Cl. 410—148 **12 Claims**



1. A load support system, comprising:

first and second support elements horizontally spaced apart one from another, each said support element having a vertically-elongated opening therein, each said opening having substantially the same dimension and having a lower and an upper edge which are in substantially horizontal alignment,

elongate load support bar means having axially relatively-movable members and vertically-elongate one-piece mounting elements fixedly mounted at opposite ends of said load support bar means,

each said mounting element having a transversely-extending notch formed in the lower end thereof to enable the mounting element to hook over said lower edge of the elongate opening, said notches being located relative to said support bar means such that a straight line drawn between the notches extends parallel to the axis of the support bar means, each said mounting element having a transverse dimension which is the same as that of the elongate opening, so that the side edges of the opening engage the side faces of the mounting element when located therein;

one of said mounting elements having a vertical height from the upper extremity of the notch therein to the upper extremity of the mounting element which is substantially equal to the length of the elongate opening, so that the top edge of the opening engages the upper face of said one mounting element when located thereon, and the other of said mounting elements having a vertical height from the upper extremity of the notch therein to the upper extremity of the mounting element which is less than the length of the elongate opening, and

latch means mounted to said support bar means adjacent said other one of the mounting elements, said latch means having a spring biased bolt element extending therefrom into the opening between the upper extremity of the other mounting element and the upper edge of the opening to engage the side edges and upper edge of the opening and lock said support bar means to said support elements in a horizontal position,

said spring biased bolt being retractable from the opening against the spring bias to enable said other mounting element to be unhooked from the opening and thereby the support bar means to be released from the support elements.

4,494,897

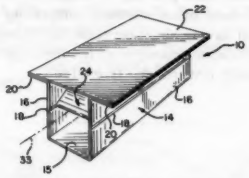
DAMAGE PREVENTION VOID FILLER FOR SEPARATING LOADS DURING TRANSIT

Eugene A. Rogers, Arlington Heights, Ill. 60004

Filed Feb. 10, 1983, Ser. No. 465,522

Int. Cl.³ B61D *45/00*; B63B *25/24*; B65D *81/04*

U.S. Cl. 410—154 **7 Claims**



1. A collapsible void filler damage prevention device adapted to fold into a flat configuration and be unfolded into an expanded configuration for protecting cargo during transit, the improvement comprising:

an outer housing providing a four sided, tubular member having a bottom, top and two sides and a longitudinal axis extending the length thereof;

said sides adapted to extend upwardly from the bottom to said top when the damage prevention device is in said expanded configuration, and, said sides having means for bowing the sides outwardly to thereby allow the void filler to collapse easily and provide an outwardly directed spring force on adjacent objects to hold the void filler in place when the sides are in said expanded configuration;

core means with means attached within said tubular member to hold the core means in position and having leg means extending to connect the bottom and top of the outer tubular member, said core means having a width to thereby contact and space apart the sides to prevent their inward movement and rigidify the outer tubular member when the void filler is in the expanded configuration;

said core means having means to allow it to be folded and collapsed when the outer housing is collapsed.

4,494,898

MOUNTING PLASTICS MEMBERS IN OPENINGS IN SHEET METAL MEMBERS

Thomas D. Brownbill, Sidmouth, England, assignor to Metal Box p.l.c., Reading, England

Filed Apr. 23, 1982, Ser. No. 371,138

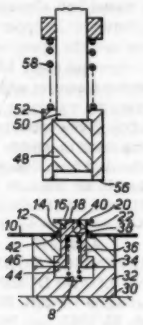
Claims priority, application United Kingdom, Apr. 23, 1981, 8112540

Int. Cl.³ B21D *51/00*

U.S. Cl. 413—14 **14 Claims**

1. A method of mounting a plastics member in an opening which is defined in a sheet metal member by a free edge of the

sheet metal, comprising forming up a marginal region of the sheet metal member around the location of the opening, receiving the plastics member in the opening, reforming the marginal region and thereby closing the opening onto the plastics member and causing the free edge to bite into and seal around the



plastics member, and proving corrugations in the marginal region of the sheet metal member comprising undulations in the sheet metal having alternate peaks and troughs, each commencing at a location spaced from the free edge and extending radially inwardly towards the free edge.

4,494,899

PIPE TROUGH FOR TRANSPORTING PIPE BETWEEN UPPER AND LOWER POSITIONS

Tan Hoang, Oklahoma City, and James B. Smiley, Norman, both of Okla., assignors to Tri-Star Enterprises, Inc., Norman, Okla.

Filed Apr. 28, 1982, Ser. No. 372,542
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **19 Claims**

1. In a trough for use in transporting pipe between upper and lower positions of the type having means for unloading pipe at a lower position, apparatus for positioning the pipe along the trough, said apparatus comprising:

an upper and lower channels mounted lengthwise along each side of the trough;

sprocket means rotatably mounted at each end of the channels;

power means operatively connected to said sprocket means for selectively rotating the same;

chain means having an upper run contained in said upper channel and a lower run contained within said lower channel, said chain means being operatively engaged with said sprocket means;

a pipe carrier for receiving one end of a pipe, said carrier being received in the trough;

carrier support means extending downwardly from said pipe carrier;

roller means rotatably mounted on said carrier support means, said roller means being received within said upper channel and further being in rolling engagement with said channel; and

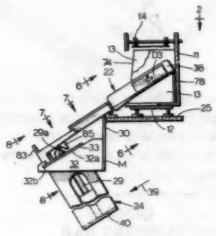
means for connecting said chain means to said carrier support means.

4,494,900

FLEXIBLE DISK SORTER SLIDE APPARATUS

Ronald R. Johnson, Shorewood; James A. Melville, St. Louis Park, and Richard D. Schuelke, Eden Prairie, all of Minn., assignors to IXI Laboratories, Inc., Shorewood, Minn.

Filed Apr. 20, 1983, Ser. No. 486,707
Int. Cl.³ B65G *57/16*
U.S. Cl. 414—27 **20 Claims**



1. Apparatus for conveying a generally flat disk jacket combination that includes a generally rectangular jacket having opposite first and second edges and opposite third and fourth edges that extend at right angles to the first and second edges to fall into a box, comprising first means for moving the disk jacket combination in a longitudinal forward direction with the first edge in advance of the second edge and discharge the combination, second means for receiving the discharged combination from the first means and supportingly conveying the combination under gravity transversely downwardly more remote from the first means with the third edge transversely in advance of the fourth edge and the first edge forwardly of the second edge during the initial transverse downward movement, and third means for receiving the combination from the second means and supportingly conveying the combination under gravity transversely downwardly more remote from the first means to discharge the combination into the box and initially impeding the transverse movement of the jacket first and third edge corner portion to impart a turning movement to the combination so that the combination rotates through an angle of about 90° as the combination moves under gravity toward the box whereby the third edge is forwardly of the fourth edge and the second edge is transversely in advance of the first edge.

4,494,901

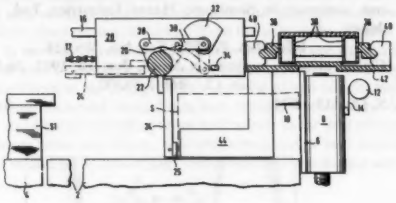
ALIGNING STACKS OF SHEETS

David Wood, Bristol, England, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 404,198
Claims priority, application United Kingdom, Aug. 4, 1981, 8123832
Int. Cl.³ B65H *31/34*
U.S. Cl. 414—28 **2 Claims**

2. An apparatus for aligning successive stacks of sheets comprising a horizontal air table, means for feeding successive stacks onto one end of the table, a vertical backboard at the other end of the table, a horizontally disposed sheet-separating blade projecting from the backboard and movable vertically, a first pusher movable along the air table between said feeding means and said backboard in a direction perpendicular to said backboard, and a second pusher movable across the air table parallel to said backboard to push the aligned stack transversely away from the table and blade, whereby horizontally

offset upper and lower portions of said stacks are vertically aligned by said first pusher pushing said stack portions against



said backboard, said horizontally extending blade serving to penetrate between said upper and lower stack portions to facilitate their vertical alignment with each other.

4,494,902

METHOD OF AND DEVICE FOR FEEDING ELECTRIC AND/OR ELECTRONIC ELEMENTS TO GIVEN POSITIONS

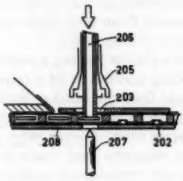
Bernardus J. Kuppens, and Hendrik C. Wardenaar, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 399,042

Claims priority, application Netherlands, Jul. 29, 1981, 8103573

Int. Cl.³ B65B *69/00*

U.S. Cl. 414—223 **26 Claims**



1. A method of feeding and transferring elements, comprising feeding a series of elements along a feed path in a feed direction, so as to move the elements one at a time to a transfer position; and transferring an element from said transfer position in a transfer direction by a transfer member,

characterized by the additional steps of

defining said feed path by a feed channel enclosing said series of elements on all sides except in the transfer direction, said feed channel having a removal opening at the transfer position to permit movement of an element in the transfer direction,

moving an end of an elongated part of a transfer member through said removal opening into contact with one side of an element at the transfer position,

moving an ejection pin into contact with the other side of the element,

pressing the element out of the respective transfer position by further movement of the ejection pin, while holding the element between the ejection pin and the elongated part, and

then holding the element by the transfer member and transferring the element to another, selected position.

9. A device for heating and transferring a plurality of series of elements, comprising

a plurality of feed channels arranged substantially parallel with each other, each channel defining a feed path and enclosing said path on all sides, and having a removal opening at an end of the channel, said removal openings being arranged in a straight line,

a corresponding plurality of transfer members disposed opposite each respective removal opening,

means for moving the transfer members in a transfer direction transverse to said feed direction,

characterized in that each of said transfer members comprises an elongated part having an end disposed toward the feed channel,

said means for moving the transfer member includes means for moving said elongated part through said removal opening into contact with one side of an element located at the transfer position aligned with said opening, and

the device further comprises a corresponding plurality of ejection pins disposed to the other side of the feed channel opposite respective elongated parts, and

means for first moving each respective elongated part until it contacts a respective element at the transfer position, subsequently displacing the respective ejection pin together with the element and the elongated part, and then holding the element by the transfer member and returning the ejection pin to its initial position.

4,494,903

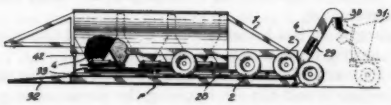
METHOD OF SUPPLYING CONCRETE

Evelyn Badicel, 1160 St. Mathieu St., Apt. 1110, Montreal, Canada H3H 2P4, and Gunnar O. Porko, 420 Lazard St., Mount Royal, Canada (H3R 1P5)

Filed Jun. 7, 1982, Ser. No. 385,447

Int. Cl.³ B65G *65/42*

U.S. Cl. 414—376 **3 Claims**



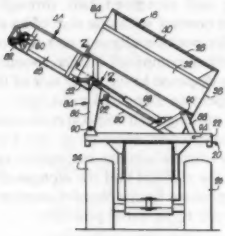
1. A mobile platform for positioning at a destination site a truck trailer carrying at least one compartmented container defining two bottom-discharging compartments adapted to carry aggregate in one compartment and cement in the other compartment, with both compartments having discharge apertures located along a line parallel to the centerline of the truck trailer, said platform including an elongated frame adapted to rest on the ground, defining a pair of lateral transversely-spaced longitudinally-extending tracks for receiving the wheels of the truck trailer and having a front and a rear end, a longitudinally-extending concrete ingredients conveying means disposed longitudinally of said platform between said tracks, said conveying means including a conveyor enclosed in a casing, said casing haing spaced load-receiving apertures adapted to register with the discharge openings of said container compartments when said truck trailer is positioned on said platform, ramp means pivoted to the front end of said platform to permit said truck trailer to embark onto said platform, said ramp means movable between a ground-engaging position extending forwardly of said platform and a stored position folded backwardly over said platform, a towing arm secured to and extending forwardly from the front end of said platform for hitching the platform to a towing truck, ground-engaging wheels carried by the rear end of said platform and respectively aligned with said tracks, and power means to raise and lower the platform with respect to said wheels, whereby said platform, when raised, can be towed by a truck on a road, said ground-engaging wheels protruding upwardly from said tracks when said platform rests on the ground to act as positioning bumpers for the rear wheels of said truck trailer, thereby compelling the positioning of the container discharge openings immediately over the conveyor load-receiving apertures.

4,494,904

SELF-UNLOADING ON-THE-GO FORAGE HOPPER

Amos G. Hill, Hesston, and Harold K. Garrison, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Mar. 4, 1982, Ser. No. 354,906
Int. Cl.³ B60P 1/04; A01D 90/00
U.S. Cl. 414—491 9 Claims



1. A harvester comprising: mobile frame means;
apparatus mounted on said frame means and operable to gather crop materials from a field being traversed by the harvester and to reduce the materials into small segments,
said apparatus including a delivery spout through which a stream of the segments is discharged rearwardly from the apparatus;
an enclosed box having a top, a bottom, and four sides extending between said top and bottom,
a front side of the box having a crop entry opening therein adjacent said top for receiving the stream of crop segments from the delivery spout;
means mounting said box on said frame means for movement between an upright position in which said sides are generally upright and said bottom is generally horizontal and a laterally tilted position in which said sides are inclined and said bottom is sloped generally upwardly and outwardly;
power means connected for causing said movement of the box between said positions,
a lateral side of the box having structure shiftable from a normal raised position in which it serves as a crop confining and containing portion of the box to a lowered position generally aligned with and as an extension of said bottom in which it serves as an outwardly projecting unloading spout for the box; and
an unloading conveyor associated with said bottom and said structure and selectively operable to convey crop materials up the inclined bottom and the structure when the box is in its tilted position and said structure is in its lowered position,
said delivery spout being positioned forwardly of the box and separate therefrom and within the height dimensions of the latter when the box is in both said positions,
said entry opening being so disposed relative to said delivery spout as to permit the continuous, uninterrupted admittance of crop materials into the box during unloading thereof when the box is in its tilted position whereby harvesting, loading, collecting and unloading of crop materials can be carried out on-the-go.

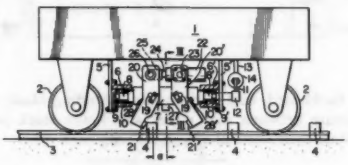
6. A harvester as claimed in claim 1, wherein said entry opening and the delivery spout are so disposed relative to one another as to permit loading of the box from the delivery spout when the box is in its upright position and during movement thereof between said upright and tilted positions.

4,494,905

APPARATUS FOR STOPPING TRUCK AT PRESELECTED POSITION

Hiromasa Yamaji, and Yuji Kobayashi, both of Yokosuka, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,318
Claims priority, application Japan, Jun. 10, 1981, 56-89078
Int. Cl.³ B65G 69/00
U.S. Cl. 414—584 4 Claims



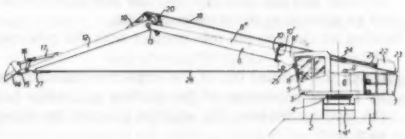
1. An apparatus for stopping a truck for use in coke oven operations at a preselected position comprising a clamping mechanism supported by said truck and at least one stopping member stationarily disposed along the path of movement of said truck and adapted to be clamped by said clamping mechanism, wherein said clamping mechanism comprises:
a frame rotatable about an axis extending in the direction of running of said truck;
driving means for rotating said frame within a predetermined angular range;
a pair of levers pivotally secured at their central portions to said frame so as to be swingable about two respective axes which are perpendicular to the axis of rotation of said frame and spaced from each other in the direction of the axis of rotation of said frame;
a fluid-operated cylinder having a piston rod and a cylinder body each being connected to a respective end of one of said levers, said fluid-operated cylinder being operative to swing said levers in such a manner that the other ends of said levers move towards each other to engage said stopping member whereby said truck is moved forward or backward to said preselected position; and
a stopper fixed to the frame between said levers and adapted to limit the closing positions of said levers.

4,494,906

EARTHMOVING MACHINE

Norman Brocklebank, Beverley, and Kenneth A. Deighton, Cottingham, both of England, assignors to Priestman Brothers Limited, Hull, England

Filed Oct. 20, 1982, Ser. No. 435,466
Claims priority, application United Kingdom, Oct. 21, 1981, 8131708
Int. Cl.³ B66C 23/72
U.S. Cl. 414—719 10 Claims



1. An earth moving machine comprising a base; a generally horizontal axis defined on said base; a boom having a first end and a second end, said boom being pivotally mounted intermediate its ends about said generally horizontal axis; pivot means at said first end of said boom; an arm mounted on said pivot means at said first end of said boom; a movable counterweight

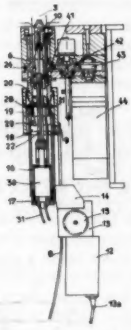
at said second end of said boom; means for slidably moving said counterweight along said boom; means operatively connecting said counterweight to said arm and adapted to cause said arm to pivot outwardly away from the axis as the counterweight is moved outwardly along the boom in the opposite direction and to cause the counterweight to move inwardly along the boom as the arm pivots toward the axis; a winch, said winch being mounted on said machine remote from said pivot means; and a cable extending from said winch to the end of said arm remote from said boom, whereby operation of said winch to wind in said cable draws said arm inwards towards said axis.

4,494,907

POSITIONING AND REMOVAL DEVICE FOR A CHECKING MEANS OR A TOOL IN A RECEIVER INSTALLATION

Jean Coussau, Paris, and Georges Clar, Lyons, both of France, assignors to Framatome, Courbevoie, France

Filed Mar. 29, 1982, Ser. No. 362,824
Claims priority, application France, Apr. 17, 1981, 81 07835
Int. Cl.³ B65G *47/00*
U.S. Cl. 414—749 **2 Claims**



1. Positioning and removal device for checking means or a tool in a receiver installation, in operating position in a medium inaccessible to an operator, said device comprising:

(a) a guidance and displacement track constituted by a rack of flexible material which can follow a non-rectilinear path, fixed at an anchoring point to the receiver installation at one of its ends and of sufficient length for its other end to terminate outside of said inaccessible medium;

(b) a carriage movable on said guidance track including a motor and a gear wheel rotated by said motor and engaging with said rack;

(c) a loading sleeve fastened to said carriage, of tubular shape, constituting at its forward end, in the direction of movement of said carriage towards said receiver installation, an actuating cam on its outer surface, including on its inner surface a hooking groove and bearing a removable closure part obturating at least partly the inner bore of said sleeve at its rear end;

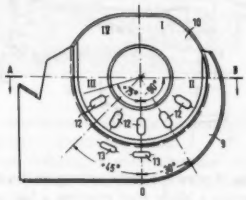
(d) a support unit for said checking means provided with catches for hooking said support unit to said sleeve at the level of said groove, the rear portion of which is engageable in said sleeve to become supported on said closure part, and the forward portion of which includes hooking means complementary to the hooking means borne by said receiver installation, said cam formed on said sleeve being a cam for actuating the hooking means of said support unit on said receiver installation, this actuation in the direction of opening and hooking of the catches of said support unit on said sleeve being caused by a forward movement of said carriage when the closure part of said sleeve is in an out-of-service position, while the transport and hooking of the support unit on said receiver installation are produced also by forward movement of said carriage when said closure part is in service position in said sleeve.

4,494,908

TANGENTIAL BLOWER

Reinhold Hopfensperger, Dietelskirchen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 257,819, Apr. 27, 1981, abandoned.
This application Feb. 22, 1983, Ser. No. 468,244
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016438
Int. Cl.³ F04D *17/04*
U.S. Cl. 415—206 **8 Claims**



1. In a tangential blower having a conducting element mounted to the side members of the housing and enclosing the pressure space of the blower, a partition wall between the suction and the pressure spaces of the blower, and an impeller rotatably supported in bearings provided for in the side members of the housing, having blade edges extending almost in parallel with the axis of rotation, said conducting element—starting from a line of greatest approximation to the circumference of the impeller—extending at first at a preferably continuously increasing distance away from the circumference of the impeller and, after ninety or more angular degrees, continues to extend substantially as a straight line, the end of the partition wall facing the impeller having a rounding, the improvement comprising:

(a) said partition wall (3), starting out from said rounding (4), has a first section expanded in a diffuser-like manner, a second section constricted in a confuser-like manner and, finally, a third section expanded in a diffuser-like manner until reaching the outlet cross section, said third section of said partition wall (3) together with the straight portion of said conducting element including an angle (α) between 20 and 40 degrees, and having such a position that the pressure-side outlet cross section will amount to approximately 55 to 65% of the intake cross section on the suction side;

(b) the pressure-sided outer edge of the conducting element (2) is provided with a stepping (8) extending over almost the entire length of the blower;

(c) the distance C (FIG. 1) between the impeller circumference and the conducting element (2) amounts to approximately 0.2 to $0.4 \times D_L$ (impeller diameter);

(d) the side members (9) of the housing are provided with pockets (10) having openings (12), and the side members (9) of the housing are also provided with openings (13) outside the pocket range, said openings (12) within the pocket range being arranged within an angular section of approximately 165 degrees in quadrant II and in quadrant III of the side members (9) of the housing, and altogether having an opening cross section amounting approximately to 4–5% of the impeller face side;

(e) the impeller face sides are provided with openings (17); and

(f) the spacing (23) between the impeller circumference and the conducting element (2) at the point (A) of its greatest

approximation to the impeller, amounts approximately from 0.08 to $0.12 \times D_L$.

4,494,909

DAMPING DEVICE FOR TURBOJET ENGINE FAN BLADES

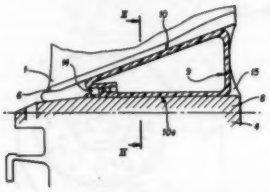
Alexandre Forestier, Vaux le Penil, France, assignor to S.N.E.C.M.A., Paris, France

Filed Dec. 3, 1982, Ser. No. 446,625

Claims priority, application France, Dec. 3, 1981, 81 22622

Int. Cl.³ F01D *5/10*

U.S. Cl. 416—190 **4 Claims**



1. A damping device for turbojet engine fan blades, each of said blades having a blade root portion, a half-platform and a shank interconnecting said root portion and said half-platform, comprising:

a disc having a rim portion formed of a plurality of teeth delimiting axial grooves which receive said root portion of each of said blades, each of said blade root portions being extended radially by said shank connected to said half-platform and wherein each half-platform extends circumferentially on either side of said shank and wherein the half-platforms and the shank of two adjacent blades and each tooth of the disc form a space between said two adjacent blades; and

a wedge member mounted in said space and which further comprises a hollow, bellows-shaped body and means operatively associated with said wedge member for limiting axial movement of said wedge member, said body being inflated after mounting such that said body entirely occupies said space wherein said wedge member further comprises a first and second side which are interconnected on an upstream side of said blades wherein said first side is supported on end portions of the disc teeth and said second side is supported on said half-platforms of said adjacent blades and a folding wall interconnecting said first and second sides.

4,494,910

LARGE SURFACE STRUCTURAL COMPONENT, ESPECIALLY ROTOR BLADE

Michael Hahn, Ottobrunn, and Franz Sperber, Kolbermoor, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

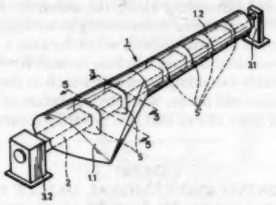
Filed Mar. 22, 1982, Ser. No. 360,214

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114567

Int. Cl.³ F03D *1/06;* **B65H** *81/00*

U.S. Cl. 416—226 **10 Claims**

1. A large surface structural component, such as a rotor blade, having a given cross-sectional finished contour, comprising a plurality of support core sections of foam material forming a support core, said support core sections initially having an excess dimension, a plurality of disk type positive templates inserted in said support core so that each disk type positive template is rigidly connected to two adjacent core sections for interconnecting the core sections in a force transmitting manner, said disk type positive templates having a circumferential contour corresponding at least partially or substantially to said given cross-sectional finished contour of the structural component for defining a guide limit for a subsequent machining operation on said core sections for removing



said excess dimension of said core sections, and a shell of fiber reinforced material for enveloping said support core.

4,494,911

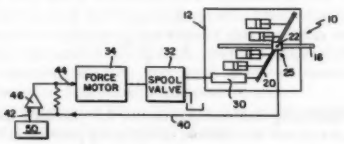
PISTON PUMP SERVO CONTROL

Duane J. Davis, Galesburg, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 29, 1983, Ser. No. 489,772

Int. Cl.³ F04B *1/26*

U.S. Cl. 417—222 **9 Claims**



1. A pump control system for controlling the pump output flow at a given pump speed comprising:

a variable displacement pump having a housing and a rotatably positionable swash plate therein for controlling the output of said variable displacement pump;

means for altering the position of said swash plate so as to change said pump output flow in response to control signals;

means for producing an electric signal representative of the desired swash plate position;

an electric feedback signal producing means mounted within said pump housing and directly connected to said swash plate for indicating the actual position of said swash plate; and

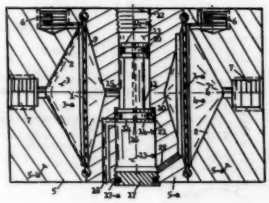
means for comparing said electric signals representing the desired and actual swash plate positions and producing an error signal representative of the difference between these two positions, and means for providing control signals to said means for altering the position of said swash plate as a function of said difference so as to cause said error signal to be decreased by altering swash plate position, and said means for providing control signals also includes a failsafe means generating a reference signal, comparing said feedback signal to said reference signal, and preventing said means for providing control signals from altering the position of said swash plate when the magnitude of said reference signal is greater than said feedback signal.

4,494,912

ENERGY CONSERVING AIR PUMP

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Sep. 16, 1982, Ser. No. 419,011
Int. Cl.[3] F04B 45/04
U.S. Cl. 417—347 7 Claims



1. An energy conserving air pump comprising:

a pump operating and a pumping sections in a pump housing provided with a first air actuated pump operating section located substantially central thereto including a valve chamber with a shuttle valve means incorporated therein and consisting of a differential diameter piston slidably movable inside a differential diameter bore thereof provided with air porting means including a supply and exhaust port means for compressed air flow therethrough and into adjacent second pumping section provided with a chamber separated by a reciprocating pumping means including movable members thereof a first side of which defining a gas space therein when pressurized by said air delivered thereto from said first pump operating section via ports incorporated therein until said air is discharged therefrom via said exhaust port means constituting a full reciprocating cycle pumping requires while a second side of which defining a liquid space thereof is adaptable of fluid pumping from a first fluid supply to a second fluid discharge port means when said pumping members become reciprocatingly shifted therein by said air,

said pump operating section and said pumping section in combination operating in an inter-related function so that when said first pump operating section becomes energized by said pressurized air entering said supply port means via a first pump operating port in communication with said valve chamber, said differential diameter piston shuttles therein from a first pump atmospheric position to a second pump energized position and back thereby allowing a simultaneous fluid pumping by the air action over said pumping members until said pressurized air completes the cycle therein and becomes exhausted therefrom, rendering said pump operating section atmospheric, and vice-versa,

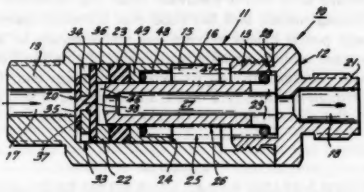
said differential diameter piston includes a first smaller diameter piston end which when pressurized by said air entering said supply port means exerts a first pressure-end-force to said differential diameter piston urging said piston position change until said pressurized air passes an air pilot port incorporated centrally thereto to exit a second larger diameter piston end for exerting a second larger pressure-end-force than said first end force to urge an automatic piston return to said first pump atmospheric position as a result of a force differential over said differential diameter piston for piston unloading at the end of the cycle via said exhaust port means provided therein to permit cycle repetition with operation of said pumping section when said shuttle valve means becomes energized, and vice-versa, said pressurized air performing dual function over said differential diameter piston automatically by first shifting said piston from said first to said second positions with a single slug of air which also shifts said pumping members before exhausting into the atmosphere during each operating cycle of the pump.

4,494,913

POSITIVE DISPLACEMENT INJECTOR

Philip J. Keller, Pompton Plains, N.J., assignor to Bijur Lubricating Corp., Bennington, Vt.

Filed Jul. 8, 1982, Ser. No. 396,408
Int. Cl.[3] F04B 35/00
U.S. Cl. 417—349 5 Claims



1. A positive displacement injector for controlling the application of fluids, said injector including:

housing means defining a main chamber communicating with an inlet port and an outlet port downstream of said inlet port;

piston means disposed within said main chamber;

valve means movable mounted within said main chamber upstream of said piston means;

hollow guide means within said main chamber defining a fluid passage having its downstream end in communication with said outlet port, and supporting said piston means for movement toward and away from said valve means;

biasing means urging said piston means toward said valve means to operate the latter to an upstream sealing position blocking said inlet port to prevent backflow therethrough;

said valve means being movable downstream by fluid injecting pressure applied at said inlet port, to a downstream sealing position engaging said guide means and blocking flow of fluid into said passage through its upstream end;

aperture means extending from said passage outboard of said guide means at a point downstream of said piston means;

said valve means including a seal in the form of a flexible disk having a peripheral edge portion biased toward a normal undeflected position to block upstream fluid flow past said valve means, said edge portion being deflectable downstream when subjected to fluid injecting pressure;

said valve means also including a relatively stiff disk adjacent the upstream face of said flexible disk and having a periphery with aperture means thereat, said seal when in its normal undeflected position blocking upstream fluid flow through said aperture means of said relatively stiff disk at the said periphery thereof, said edge portion of said flexible disk being deflected downstream by fluid flowing downstream through said aperture means of said relatively stiff disk;

the valve means also including a valve section in front of said relatively stiff disk for blocking said inlet port, and a narrow connecting section positioned at the center of said flexible disk and extending through a central aperture in said relatively stiff disk;

upon application of fluid injecting pressure at said inlet port, fluid forces move said valve means downstream and acting through said valve means force said piston means downstream until movement of said valve means is stopped by engagement with said guide means, after which said peripheral edge portion of said seal deflects downstream permitting direct application of fluid under injecting pressure to said piston means to continue moving the latter downstream until movement thereof is arrested

by stop means, with upstream movement of said valve means being effective to force fluid into said passage through its upstream end, and downstream movement of said piston means being effective to force fluid into said passage though said aperture means;

when downstream movement of piston means stops, fluid pressures on opposite sides of said seal equalizes, thereby permitting the edge portion of said seal to assume its said normal undeflected position;

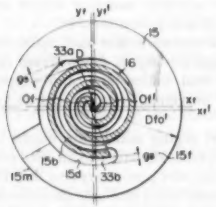
upon subsequent releaxation of fluid injecting pressure at said inlet port, fluid being forced upstream by said piston means as it moves upstream under the influence of said biasing means, and this fluid that is forced upstream by said piston means moving said valve means to said upstream sealing position with some of this fluid entering said passage through its said downstream end, flowing through said aperture means and outboard of said passage to the downstream side of said piston means.

4,494,914

SCROLL FLUID APPARATUS WITH DISPLACED CENTERS FOR THE SCROLL MEMBER END PLATES

Masao Shibayashi, Shimizu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1983, Ser. No. 481,151
Int. Cl.³ F01C *1/02*
U.S. Cl. 418—55 **10 Claims**



1. A scroll fluid apparatus comprising:

a stationary scroll member including a disc-shaped end plate and a wrap of a spiral form disposed in upright position on the end plate and having a suction chamber formed by an arcuate wall at an outer peripheral portion of the wrap; and

an orbiting scroll member including a disc-shaped end plate and a wrap of a spiral form disposed in upright position on the end plate;

the stationary scroll member and the orbiting scroll member being assembled with the wraps facing inwardly and meshing with each other so as to allow the orbiting scroll member to move in orbiting movement with respect to the stationary scroll member without rotating on its own axis, the stationary scroll member being formed with an exhaust port opening in a central portion of the end plate and a suction port opening at its outer peripheral portion so that gas is drawn by suction through the suction port and compressed in compression spaces defined by the two scroll members and shifting the position toward the centers of the end plates to have the volume reduced to thereby discharge compressed gas through the exhaust port;

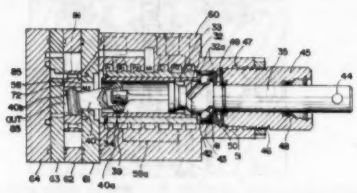
the orbiting scroll member and the stationary scroll member have the centers of their disc-shaped end plates displaced from the centers of base circles of the respective spiral wraps toward outer end edge portions of the wraps by $\pi a/2$, where π is the ratio of the circumference of a circle to its diameter and a is the radius of the base circles of the spiral wraps.

4,494,915

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,501
Int. Cl.³ F04C *2/10*; F15B *9/08*
U.S. Cl. 418—61 B **18 Claims**



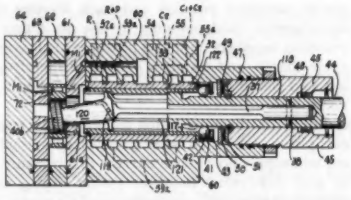
1. In a hydrostatic steering device having a rotatable drive shaft and an axially operated spool valve, an improved actuation means, said actuation means comprising a slide member, means to directly connect said slide member to the drive shaft for transforming the rotational motion of the drive shaft into axial movement of said slide member, and means to connect the spool valve to said slide member for transmitting axial motion of said slide member into axial motion of the spool valve, there being a clearance between the spool valve and said slide member allowing relative non-axial movement therebetween, with the result that rotational motion of the drive shaft is directly transformed into axial motion of the spool valve through said slide member.

4,494,916

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CYLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 381,946, May 26, 1982, , which is a continuation-in-part of Ser. No. 317,501, Nov. 2, 1981, , which is a continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Nov. 4, 1982, Ser. No. 439,058
Int. Cl.³ F04C *2/10*; F15B *9/08*
U.S. Cl. 418—61 B **10 Claims**



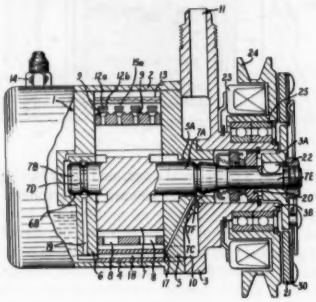
1. In a hydrostatic steering device having a rotatable drive shaft and axially operated spool valve, an improved actuation means, said actuation means comprising a slide member, means for transforming the rotational motion of the drive shaft into axial movement of said slide member, and means to connect the spool valve to said slide member for transmitting axial motion of said slide member into axial motion of the spool valve, there being a clearance between the spool valve and said slide member allowing relative non-axial movement therebetween with the result that rotational motion of the drive shaft is directly transformed into axial motion of the spool valve through said slide member.

4,494,917

BEARING STRUCTURE FOR AN AIR COMPRESSOR

Haruyuki Komori, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Continuation-in-part of Ser. No. 294,995, Aug. 21, 1981, abandoned. This application Aug. 5, 1983, Ser. No. 520,857
Claims priority, application Japan, Sep. 12, 1980, 55-126981
Int. Cl.³ F01C 21/02
U.S. Cl. 418—69 7 Claims



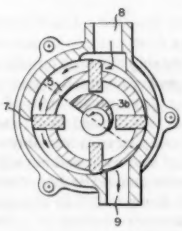
1. In a gas compressor, the combination comprising:
a cylinder having an end block;
a compressor rotor within said cylinder and having an axial mounting shaft extending therefrom toward said end block;
a bearing surface defining a substantially constant diameter opening through said end block aligned with said mounting shaft and dimensioned to receive therein said mounting shaft for rotatably supporting said mounting shaft to mount said rotor for rotation within said cylinder; and
said mounting shaft having a circumferential surface oil groove positioned within the opening through said end block and opposite said bearing surface, a substantially constant diameter portion extending the length of said bearing surface up to said oil groove and on the side of said oil groove as said rotor and a tapered portion starting adjacent said oil groove and converging in a direction away from said oil groove and away from said rotor and extending for substantially the length of said bearing surface beyond said oil groove.

4,494,918

AUXILIARY RADIALLY SHIFTING MECHANISM FOR VANES IN A PUMP OF THE VANE TYPE

Tadashi Nozaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,716
Int. Cl.³ F04C 2/00
U.S. Cl. 418—260 3 Claims



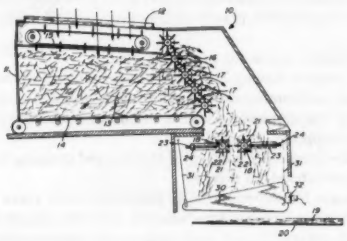
1. In a pump of the vane type having
a cup-shaped cylinder with a suction port and a discharge port, each port having a mouth with upstream and downstream sides,
A rotor eccentrically and rotatably received within said cylinder,
a number of vanes radially shiftably disposed within said rotor and adapted to be rotated relative to said cylinder as said rotor rotates so as to have their radially outward ends abut against the inner periphery of said cylinder in order to form fluid delivery chambers,
whereby fluid is sucked through said suction port and discharged through said discharge port under pressure, and
a bracket to close said cylinder at its open end,
wherein the improvement comprises:
an auxiliary radially shifting means for eliminating a hunting phenomenon of said vanes, said means being disposed on said bracket in a vicinity extending in the direction of rotation only from a point near the downstream side of the mouth of said discharge port to a point just beyond the downstream side of the mouth of said suction port of said cylinder, so that abnormal wear of the vanes is prevented in a vicinity extending in a direction of rotation from a point just beyond the downstream side of the mouth of the suction port of said cylinder to a point near the downstream side of the mouth of the discharge port of said cylinder.

4,494,919

APPARATUS FOR LAYING A MAT OF WOOD STRANDS

Robert M. Knudson, and Hubert Ehrenfellner, both of British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Sep. 20, 1982, Ser. No. 420,084
Int. Cl.³ B29J 5/00; B29C 23/00
U.S. Cl. 425—83.1 11 Claims



1. Apparatus for continuously laying wood strands in a mat of substantially even thickness, the mat advancing at a substantially constant speed comprising:
means for forming a pile of wood strands of substantially uniform depth,
a plurality of spike rolls rotating about substantially horizontal parallel axes spaced vertically apart and located at one side of the pile of wood strands, the spike rolls adapted to pull wood strands out of the pile, and form a uniform curtain of falling strands,
advancing means for the pile of wood strands to force the pile against the spike rolls,
a pair of counter-rotating spreader rolls side by side in the same horizontall plane, the spreader rolls having axes substantially parallel to the spike roll axes and located beneath the spike rolls to receive the curtain of fallen strands,
each of the spreader rolls having a plurality of radial extending spikes to distribute the strands evenly in a mat beneath,
means for rotating the spreader rolls in counter-rotating directions such that strands distributed by the spikes are directed outside the spreader rolls and not in between, and
horizontal adjustment means for the spreader rolls to adjust

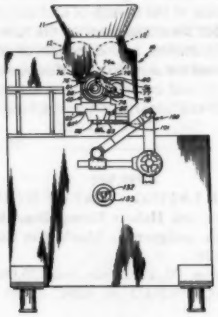
the location of the spreader rolls beneath the curtain of fallen strands, provide a predetermined distance between tips of the spikes on one spreader roll and tips of the spikes of the other spreader roll and insure that the tips of the spikes on one spreader roll do not overlap with the tips of the spikes on the other spreader roll.

4,494,920

POSITIVE-DISPLACEMENT VOLUMETRIC DEPOSITOR APPARATUS FOR BAKING DOUGH AND THE LIKE

Joseph R. Anderson, Ada, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Filed Nov. 7, 1983, Ser. No. 549,071
Int. Cl.³ A21C *3/10, 5/00*
U.S. Cl. 425—190 **38 Claims**



1. A volumetric metering apparatus for providing a continuous succession of accurately metered deposits of media, comprising:

(a) a supply means for providing media;

(b) a support having a cavity therein, said cavity being in fluid communication with said supply means and being in fluid communication with a discharge orifice defined by said support;

(c) valve means disposed in said cavity and defining first and second chambers therein;

(d) means for moving at least portions of said valve means between a first position wherein said first chamber is in fluid communication with said supply means whereupon said first chamber is charged with media and wherein said second chamber is in fluid communication with said discharge orifice, and a second position wherein said second chamber is in fluid communication with said supply means whereupon said second chamber is charged with media and wherein said first chamber is in fluid communication with said discharge orifice; and

(e) positive-displacement metering plunger means disposed in said chambers and operatively associated with said valve means, for alternatingly discharging volumetric quantities of said media from said chambers when each of said chambers is in fluid communication with said discharge orifice.

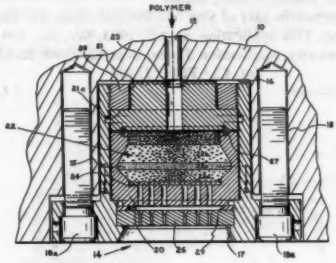
4,494,921

FILTER ELEMENT

Lyles H. Sowell, Old Hickory, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 8, 1983, Ser. No. 521,422
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—198 **6 Claims**

1. A layered filter bed element for removing contaminants from a molten fluid polymer stream flowing through the layer in a direction substantially normal to the layers, said filter bed element comprising: a compressed layer of formable powdered



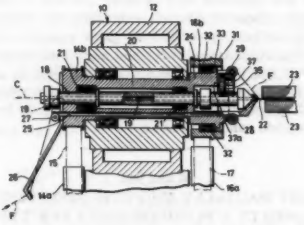
metal defined by a peripheral edge, said layer having a porosity that increases from its center toward its periphery.

4,494,922

APPARATUS FOR STAMPING FILAMENTARY MATERIAL FOR HELICALLY COILED SLIDE-FASTENER COUPLING ELEMENTS

Takeo Fukuroi; Shigenori Omori, both of Uozu, and Akira Tanaka, Kurobe, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,650
Claims priority, application Japan, Jul. 12, 1982, 57-120827
Int. Cl.³ A01J *21/00, 25/12*
U.S. Cl. 425—324.1 **6 Claims**



1. An apparatus for stamping a filamentary material for the production of a row of continuous coil coupling elements on a mandrel to be attached on slide fastener stringer tapes, said apparatus comprising:

(a) a frame;

(b) a stationary shaft mounted on said frame and having a mandrel extending from one end of said stationary shaft;

(c) a driven rotor rotatably mounted on said stationary shaft;

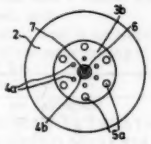
(d) a rotative ring member mounted at one end of said rotor and rotatable by a drive power derived from the same source of power as that for said rotor; and

(e) a pair of mating stamping rolls rotatably mounted on one and the same end of said rotor and having rotational axes parallel to each other and to the axis of said rotor, one of said stamping rolls being in driven engagement with said ring member, said rotor rotating at a different angular speed from that at which said ring member rotates, with the resulting speed differential being utilized to make said stamping rolls rotate on their own axes as they orbit about the axis of said rotor.

4,494,923
OXY-FUEL BURNERS

Paul Guillaume, Ivry-sur-Seine; Luc Vezin, Domont, and Bernard Dubi, Velizy Villacoublay, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Aug. 15, 1983, Ser. No. 523,621
Claims priority, application France, Aug. 25, 1982, 82 14566
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—9 **6 Claims**

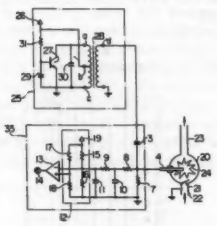


1. In a method for igniting an oxy-fuel burner comprising injecting oxidizing gas and fuel jets from the burner, the jets being arranged to engender recirculation flows during mixing of said oxidizing gas and fuel jets with each other, and inducing an electric ignition spark within a volume of said recirculation flows; the improvement wherein said jets are arranged with an inner ring of fuel jets around said electric ignition spark and an outer ring of oxidizing gas jets around said ring of fuel jets, the flow rates of said jets and the arrangement of said jets relative to said electric ignition spark are such that within said recirculation flow volume the relative proportions of oxidizing gas and fuel lie between the oxidizing-gas-rich and fuel-rich inflammability limits thereof, but closer to the fuel-rich limit.

4,494,924
FLAME DETECTOR FOR PULSE COMBUSTION APPARATUS

Toshio Tanaka, Toride; Motoshi Miyanaka, and Shigekichi Kochiyama, both of Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 305,725, Sep. 25, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,285
Claims priority, application Japan, Aug. 24, 1981, 56-131517
Int. Cl.³ F23N *5/12*
U.S. Cl. 431—78 **9 Claims**

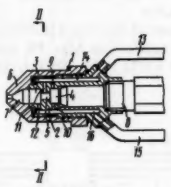


1. A flame detecting circuit for detecting flames produced intermittently in a pulse combustion apparatus, comprising a pair of terminals capable of being disposed to be in contact with flames produced intermittently as the result of pulse-like combustion in said combustion apparatus, a single A.C. voltage generating circuit for producing an A.C. voltage of a predetermined high frequency and of predetermined amplitude to be applied across said pair of terminals, and a flame detecting circuit of a rectifying system for producing a signal representative of presence or absence of said flame on the basis of an input signal which is produced across said pair of terminals through rectifying action of said flame when a period of occurrence of said flame is superposed on a period of a flame detecting voltage portion of said A.C. voltage, wherein said predetermined frequency is so selected that it is higher than that of a commercial A.C. power supply line and higher than a maximum value of frequencies of which said flames are produced in said pulse-like combustion, and that the period of at least one flame detecting voltage portion of said A.C. voltage is superposed onto the period of each of completely all the flames, and that in the case where a part of the flame detecting voltage portion of one cycle of said A.C. voltage and a part of the flame detecting voltage portion of succeeding one cycle of said A.C. voltage are superposed onto the period of one flame, the sum of periods of both the superpositions of said one and said succeeding one cycles of said A.C. voltage is not shorter than the entire period of the flame detecting voltage portion of one cycle of said A.C. voltage.

4,494,925
DEVICE FOR GAS JET CUTTING OF MATERIALS

Viktor G. Zabotin, Ulitsa XXII siezda 179, kv. 27; Alexandr I. Kosenko, Ulitsa Novo-Sadovaya 42, kv. 32; Sergei P. Kozlov, Ulitsa Zaporozhskaya 45, kv. 7; Alexandr N. Pervyshin, kvartal 15, 6, kv. 82; Viktor P. Lukachev, Volzhsky prospekt, 37, kv. 10, all of Kuibyshev; Vladimir A. Mikhailov, Ulitsa Mira 92, korpus 1, kv. 79, Moscow; Valery M. Buryakov, Ulitsa Onezhskaya 15b, kv. 27, Moscow; Roman D. Tokhunts, Izmailovsky bulvar, 67, korpus 1, kv. 5, Moscow; Vladimir S. Yakovlev, Ulitsa Marshala Novikova 6, korpus 2, kv. 56, Moscow, all of U.S.S.R.; Viktor Y. Levin, deceased, late of Kuibyshev, U.S.S.R., and by Sofia N. Levin, administratrix, Volzhsky prospekt, 37, kv. 58, Kuibyshev, U.S.S.R.

PCT No. PCT/SU80/00221, § 371 Date Aug. 16, 1982, § 102(e) Date Aug. 16, 1982, PCT Pub. No. WO82/02424, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 30, 1980, Ser. No. 408,224
Int. Cl.³ F23Q *3/0*
U.S. Cl. 431—158 **8 Claims**



1. A device for gas jet cutting, comprising:
a head;
a gas producer in said head;
said gas producer including primary and secondary combustion chambers axially aligned and interconnected by an axial passage;
a nozzle discharge passage in one end of said head and communicating with said primary combustion chamber;
an electric spark igniter axially aligned with said gas producer and communicating with said secondary combustion chamber;
first and second injectors in said gas producer communicating with said secondary combustion chamber for feeding fuel and oxidizer therein;
a third tangential jet injector in said gas producer connected to said axial passage to supply oxidizer to said primary combustion chamber; and
a fourth tangential jet injector in said gas producer communicating with said primary combustion chamber for supplying fuel therein.

4,494,926

WICK HOLDER FOR A LIQUID-FUEL LAMP

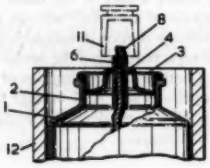
Hans J. Riha, Biscayne, Port Marnock, Dublin, Eire., Ireland

Filed Aug. 10, 1983, Ser. No. 522,052

Claims priority, application United Kingdom, May 5, 1983, 8312334

Int. Cl.³ F23D 3/13

U.S. Cl. 431—321 6 Claims



1. A wick holder for a liquid-fuel burning lamp comprises a wick support in the form of a button-like metal pressing formed to be a press-fit in the neck of a liquid-fuel containing lamp, the centre of the pressing being formed with an aperture presenting radially inwardly projecting fingers, and a wick tube of heat resisting material forced partly through the aperture so that the fingers flex as the tube is pushed through and by their own elasticity grip the tube frictionally and hold it in a desired axial position in the wick support, the fingers being spaced apart around the aperture to permit air flow therethrough when the tube is gripped by the fingers.

4,494,927

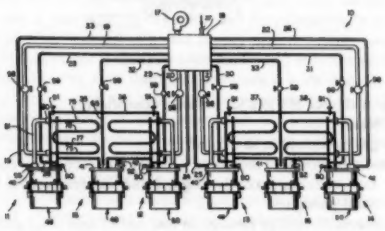
CENTRALIZED LADLE HEATING AND DRYING SYSTEM

Grigory M. Gitman, Duluth, Ga., assignor to The Cadre Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 418,798, Sep. 16, 1982, Pat. No. 4,432,726. This application May 10, 1983, Ser. No. 493,248

Int. Cl.³ F27D 3/00; F24J 3/00; C21B 9/00

U.S. Cl. 432—9 32 Claims



11. A method of simultaneously heating a plurality of ladles or the like comprising the steps of

arranging the ladles with their openings accessible for engagement by a lid,

engaging the rim of each ladle with a lid that substantially closes the opening of each ladle,

moving combustion air and fuel through the lid of at least one ladle into the ladle and burning the combustion air and fuel in the one ladle,

moving the exhaust gases from the at least one ladle through its lid and through the lid of and into a second ladle, and exhausting the gases from the second ladle.

4,494,928

METHOD AND APPARATUS FOR PRODUCING EXPANDED CLAY AND EXPANDED SHALE

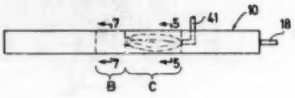
Hans-Joerg Rohrbach, Balingen, Fed. Rep. of Germany, assignor to Rohrbach Technologie KG and Baustofftechnik GmbH & Co., both of Balingen, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,167

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228745

Int. Cl.³ F27B 14/00, 7/36, 7/02, 7/14

U.S. Cl. 432—13 7 Claims



2. In a rotary tubular kiln for producing expanded clay or expanded shale, which kiln includes a means defining a continuous, essentially linear product conveying and treating region which includes a preheating zone enclosed by a cylindrical jacket, the kiln having charging and discharge ends at respectively opposite ends of said product conveying and treating region, a stationary burner disposed in the vicinity of the discharging end for heating said conveying and treating region, and a mantle burner fixed to said jacket to rotate therewith and located for heating the preheating zone, the improvement comprising means mounted in said kiln for mixing raw material introduced in the kiln via the charging end, said mixing means being located in the preheating zone immediately preceding said mantle burner.

4,494,929

CONTINUOUS HEAT TREATMENT FURNACE

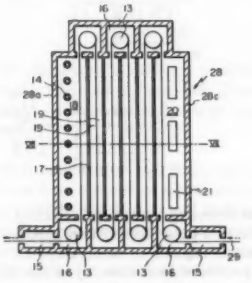
Masato Fujioka; Katsuyoshi Kobayashi; Koichi Yuta, and Nobuyoshi Nishihara, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,489

Claims priority, application Japan, Mar. 19, 1982, 57-42885; Mar. 19, 1982, 57-42886; Mar. 26, 1982, 57-47284

Int. Cl.³ F27B 9/28; C21D 9/52, 9/54

U.S. Cl. 432—59 11 Claims



1. A continuous heat treatment furnace for heat-treating a metal strip comprising outer furnace walls defining said furnace, roller means disposed within the interior of said furnace providing a plurality of adjacent paths within said furnace interior for passing said metal strip through said furnace, a separation wall of an air-permeable solid having a three-dimen-

sional skeleton structure or net-like laminate structure disposed within the interior of said furnace, and satisfying the following requirement:

$$\frac{10}{a_p} < \delta < 300000\,\frac{\epsilon^3}{a_p^2}$$

wherein δ stands for the thickness (m) of the air-permeable solid wall, a_p stands for the specific surface area (m^2/m^3) of the air-permeable solid wall, and ϵ stands for a porosity of the air-permeable solid wall, and

wherein said separation wall is arranged between the confronting surfaces of the strip passing in two adjacent paths.

4,494,930

SHAFT FURNACE FOR HEAT TREATMENT OF FINELY DISPERSED MATERIALS

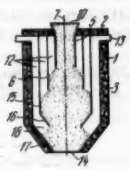
Ivan K. Bauer; Vitaly P. Malyshev; Dzhantore N. Abishev; Sergei V. Belyaev; Anatoly I. Shirokov; Nazymkul Baltynova; Elena S. Alipchenko, all of Karaganda; Djusenkhan D. Ekeibaev, and Vakhit T. Abdulkhairov, both of Dzhezkazganskaya, all of U.S.S.R., assignors to Khimiko-Metallurgichesky Institut, Karaganda, U.S.S.R.

PCT No. PCT/SU80/00185, § 371 Date Jul. 16, 1982, § 102(e) Date Jul. 16, 1982, PCT Pub. No. WO82/01936, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 28, 1980, Ser. No. 403,647

Int. Cl.³ F27B *15/10*; F27D *1/08*

U.S. Cl. 432—95 **3 Claims**



1. A shaft furnace for heat treatment of finely dispersed materials, comprising a heated casing of rectangular cross section; a cover detachably connected to said casing; a hopper communicating with said cover for charging a material in to said casing; exhaust pipes situated in a top part of the casing and through which resulting gases are drawn off; and two groups of plates located in said casing equidistant from a vertical axis of said casing, wherein the plates being arranged parallel to the vertical axis of the casing being of different lengths which increase in the direction from the vertical axis toward a narrow wall of said casing, and form passages therebetween and the narrow wall for the flow of gases toward said exhaust pipes; and, wherein the widths of the narrow walls is smaller than the widths of the wide walls of the casing by a factor of 8 to 10.

4,494,931

METHOD AND PAD WITH INDEX TABS FOR APPLYING ORTHODONTIC BRACKETS

Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405

Continuation-in-part of Ser. No. 434,494, Oct. 15, 1982, Pat. No. 4,443,189. This application Apr. 29, 1983, Ser. No. 489,831

Int. Cl.³ A61C *7/00*

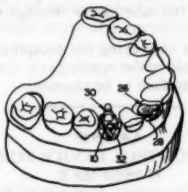
U.S. Cl. 433—8 **7 Claims**

1. An orthodontic bracket mounting pad comprising:

a generally planar pad portion having a perimeter contoured to conform generally to the shape of one of a lingual and labial surface of a selected tooth, the pad portion having a gingival end and an occlusal end, and

indexing means integrally connected to the occlusal end of the pad portion and extending outwardly therefrom for a sufficient length to be bent over the occlusal surface of the tooth to the opposite side of the tooth from said one surface;

the pad portion and indexing means being formed of a bur-



nishable material so that the pad can be burnished to substantially conform to the underlying contours of the selected tooth in a plaster model and thereby memorize such shape so that the pad can be transferred to substantially identically the same position on the corresponding tooth of the patient from whom the model was made.

4,494,932

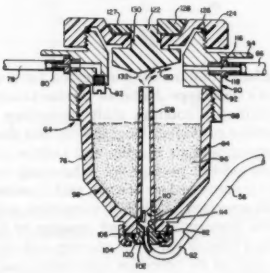
DENTAL CLEANING APPARATUS AND METHOD

Leonard Rzewinski, New Hyde Park, N.Y., assignor to Cooper LaserSonics, Inc., Santa Clara, Calif.

Filed Feb. 18, 1983, Ser. No. 467,916

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—88 **25 Claims**



1. In a system for cleaning teeth in which a stream of air having cleaning powder particles entrained therein and a separate stream of water are directed against the tooth surface to be cleaned, an improved cleaning powder dispensing apparatus for providing a controlled flow of cleaning powder particles comprising,

a powder chamber for containing a supply of cleaning powder to be dispensed, the powder chamber having sidewalls, a bottom wall and top closure means and having a maximum powder supply level spaced below said top closure means,

an elongated tube mounted in said chamber and having a bottom end adjacent said bottom wall and an open top end spaced above said maximum powder supply level,

powder dispensing opening means providing a gravity flow path for powder from the bottom portion of said chamber into the bottom end portion of said elongated tube,

first air inlet means for directing a flow of air under pressure upwardly through said elongated tube from a point below said powder dispensing opening means for conveying powder from the bottom portion of said elongated tube and discharging the powder from the open top end of the tube,

an outlet opening in the sidewall of the chamber at a point above said maximum powder supply level,

deflection means positioned to engage and deflect at least a portion of the air and powder particles discharged from said open top of said elongated tube in a direction toward the sidewall of the chamber whereby air admitted into the bottom of said elongated tube and powder particles conveyed through the tube escape through said outlet opening,

conduit means for conveying the escaping air and powder particles from said outlet opening in a stream for direction onto the tooth surface to be cleaned.

4,494,933

ROTATION CONTROL DEVICE FOR DENTAL HANDPIECE

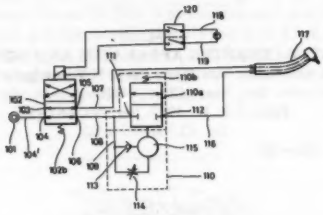
Takahiro Matsui, Uji, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 235,648, Feb. 18, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,241

Claims priority, application Japan, Feb. 19, 1980, 55-21015

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—98 **1 Claim**



1. A dental turbine rotation control device for a dental air bearing turbine in a static type dental air turbine comprising an air bearing journalling a rotating shaft supporting a dental cutting tool, a turbine provided integral with said shaft, an air passage for supplying said air bearing and turbine with compressed air and an exhaust passage for exhausting air used in said turbine and a compressed air source, said rotation control device being characterized in that it comprises a four-way magnetic valve for connecting said air passage to said compressed air source, a closing valve for opening and closing said exhaust passage, and an air timer for controlling said closing valve, said air timer comprising:

an air tank coupled to said closing valve;

a throttle valve coupling said air tank to said magnetic valve; and

a return valve in parallel with said throttle valve.

4,494,934

DENTAL MODEL BASE

Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Division of Ser. No. 230,330, Feb. 2, 1981, Pat. No. 4,378,979. This application Nov. 23, 1981, Ser. No. 323,735

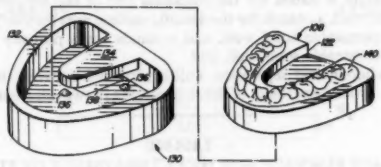
Int. Cl.³ A61C *11/00*; B29C *1/16*

U.S. Cl. 433—213 **5 Claims**

1. A base for use in a dental model to support a tooth die, said base comprising in combination:

(a) a body, said body including a planar top surface, a planar bottom surface essentially parallel with said top surface and a perimeter surface interconnecting said top and bottom surfaces, said perimeter surface being defined by a rear portion, extending between two rear corners and two converging symmetric convex sides extending from said corners and joining each other at a centrally located point at the front of said body; and

(b) a platform formed upon and extending upwardly from said top surface of said body a distance less than the height of said body for supporting the bottom surface of the tooth die, said platform including an outer marginal edge defined by an upward extension of said perimeter surface attendant a part of said rear portion, said two rear corners and said convex sides and an inner marginal edge defining



an inner recessed portion, said outer and inner marginal edges defining an approximately uniform width therebetween, said inner recessed portion being coincident with a part of said top surface of said body and including concave sides converging from said rear portion toward but short of the front point of said body and depending from said inner marginal edge.

4,494,935

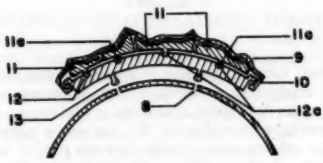
MULTIPURPOSE GLOBE

Anna L. Miller, 112 Whispering Pines Dr., Waveland, Miss. 39576

Filed Dec. 29, 1983, Ser. No. 566,715

Int. Cl.³ G09B *27/08*

U.S. Cl. 434—132 **7 Claims**



1. A globe apparatus comprising:

a sphere having major land masses and oceans depicted on the outer surface thereof;

a first set of detachable elements representing geopolitical entities detachably mounted on said outer surface of said sphere on portions thereof representing land masses, the outer edges of elements being in the shape of the geopolitical entity represented thereby; and

a second set of detachable elements detachably mounted on the outer surface of said sphere on portions thereof representing land masses, the elements of said second set representing further divisions of the land masses, the upper surfaces of one of said sets of elements being in relief to represent topological features of the portion of the land mass represented thereby, and said one set of detachable elements being mounted on said sphere on top of the other set so as to cover the other set, whereby removal of the one set reveals the other set;

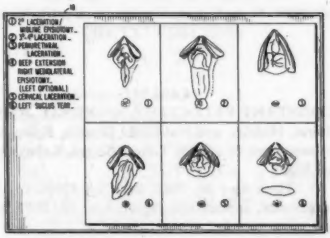
said sphere comprising four separate quadrants including connecting means for enabling the quadrants to be detachably connected together in different combinations so as to permit division of the globe into the Northern and Southern hemispheres of the Earth, and, alternately, into the Eastern and Western hemispheres of the Earth.

4,494,936

EPISIOTOMY TRAUMA REPAIR TEACHING AID

Bonnie J. Stickles, 2109 Sargent Ave., St. Paul, Minn. 55105

Continuation of Ser. No. 421,367, Sep. 22, 1982, abandoned. This application Apr. 17, 1984, Ser. No. 600,225
Int. Cl.[3] G09B *23/30*
U.S. Cl. 434—273 2 Claims



1. An episiotomy trauma repair teaching aid having a plurality of three-dimensional, simulated perinea modules into which various types of surgical incisions used in obstetrics for delivery of babies have been formed, each of said modules comprising:

a firm PCB base;

firm PCB sides connected to said base which, with said base, provide rigidity to said module;

a foam rubber interior portion having an inner surface and an outer surface, said inner surface affixed to said base, and which simulates the response of flesh to suturing;

a plurality of thin layers of elastic polymeric material connected to said outer surface of said interior layer;

a plurality of relatively soft colored layers of PCB covering said thin layers of elastic polymeric material, wherein the combination of said layers of elastic polymeric material, said layers of PCB simulates the response of subcutaneous tissue to suturing; and

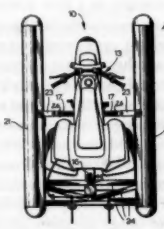
a plurality of resilient and pre-tensioned cords embedded in said interior portion to simulate pelvic musclature, wherein said PCB base, said PCB sides, said foam rubber interior portion, said elastic polymeric material, said relatively soft layers of PCB and said plurality of pre-tensioned cords combine to form a durable, flexible, sewable and realistic module in said episiotomy trauma repair teaching aid.

4,494,937

PONTOON ATTACHMENT FOR ALL TERRAIN VEHICLE

Fred H. Riermann, 20211 Maxwill, Scandia, Minn. 55073

Filed Feb. 10, 1983, Ser. No. 465,700
Int. Cl.[3] B63H *1/100*
U.S. Cl. 440—11 9 Claims



7. A paddle wheel for attachment to an all terrain vehicle to provide for water propulsion comprising a first member having a plurality of water engaging vanes;

a second member having a plurality of water engaging vanes connected to said first member, said first member pivotally connected to said second member; and

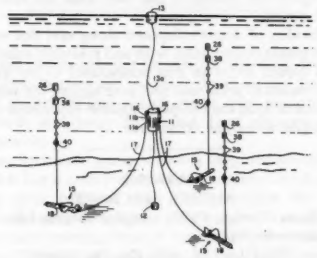
means for producing a force to pivot said first member and said second member outward to hold said first member and said second member so that when said paddle wheel is mounted to the all terrain vehicle the frictional forces hold said paddle wheel to the drive mechanism of the all terrain vehicle.

4,494,938

MASTER BUOY SYSTEM FOR ACOUSTIC ARRAY DEPLOYMENT, USING UNDERWATER GLIDE BODIES REMOTELY LAUNCHED FROM A SUBMERGED POD

Robert A. Flood, San Diego; Howard R. Talkington, La Jolla; Richard A. Wheelock, and Robert L. Watts, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 800,584, May 23, 1977, Pat. No. 4,272,835. This application Sep. 24, 1980, Ser. No. 190,111
Int. Cl.[3] B63B *21/52*
U.S. Cl. 441—33 6 Claims



1. An apparatus for hydrodynamically deploying by gravity at least one hydrophone means comprising:

means for defining an elongate body member having a cavity to contain the hydrophone means therein;

a horizontal stabilizer mounted on the aft end of the defining means for creating a hydrodynamic positive pitching moment to increase pitching stability;

a delta-shaped wing mounted on top of the defining means for providing hydrodynamic lift, the center of lift of which is aft of the center of gravity of the apparatus and the elongate body member defining means with the hydrophone means, the horizontal stabilizer, and the delta-shaped wing have sufficient mass to assure that gravity effects the hydrodynamic deployment thereof;

means interposed between the defining means and the delta-shaped wing for raising the delta-shaped wing above the defining means to increase roll stability, the raising means is configured to orient the delta-shaped wing in an inclined positive angle with respect to the longitudinal axis of the defining means;

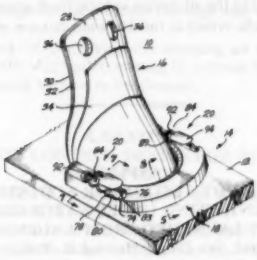
a vertical stabilizer mounted on the top of the aft end of the defining means for ensuring yaw stability and the delta-shaped wing is shaped with a positive dihedral angle to further increase roll stability; and

means mounted on the elongate body member for closing the cavity.

4,494,939
WATER SKI BINDING

David E. Calapp, Bellevue; Gail M. Ackert, Bothell, both of Wash., and Roger J. Brown, Aspen, Colo., assignors to Connelly Skis, Inc., Lynnwood, Wash.

Filed Feb. 4, 1983, Ser. No. 464,020
Int. Cl.³ A63C 15/06
U.S. Cl. 441—70 35 Claims



1. In a heelpiece for a water ski binding adapted to be mounted on the top surface of a water ski and including a heel-gripping member, a heel base interconnected therewith and means for adjustably mounting the base on the top surface of the water ski, the improvement comprising:

a. post means extending upwardly from the top surface of the ski;

b. elongate slot means in said heel base for receiving said post means;

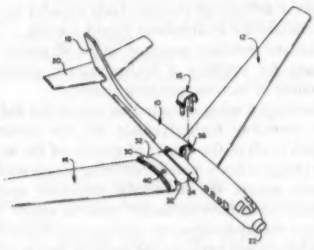
c. a plurality of detents disposed along said slot means; and,

d. cam means cooperating with and rotatable relative to said post means about an axis nonparallel to the axis of said post means to press said heel base against the water ski top surface to hold the heelpiece against movement at selected locations along the ski surface.

4,494,940
MODEL AIRCRAFT

Charles Gretz, Suisun, Calif., assignor to Life-Like Products, Inc., Baltimore, Md.

Filed Apr. 19, 1982, Ser. No. 369,567
Int. Cl.³ A63H 27/00
U.S. Cl. 446—61 10 Claims

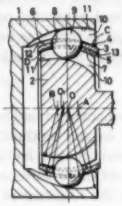


1. Model aircraft apparatus comprising an aircraft fuselage, wings, and a generally U-shaped clip for attaching the wings to the fuselage in a flying position, the wings having openings disposed on opposite sides of the fuselage, respectively, when the wings are in said position, and the clip including a bridge portion and opposed depending limbs, the bridge portion being adapted to fit over the fuselage with the limbs on opposite sides of the fuselage, and with the limbs fitting in said openings in the wings, thereby securing the wings to the fuselage, the fuselage including a recessed arch section in which the bridge portion of the clip is adapted to fit with the outer surface of the clip substantially flush with adjacent surfaces of the fuselage, the arch section including grooves for receiving the respective limbs of the clip, and the limbs of the clip being offset from the transverse center line of the bridge portion and the grooves being offset from the transverse center line of the arch section, so that the clip can only be received in the arch section in one direction.

4,494,941
CONSTANT VELOCITY UNIVERSAL JOINT

Seiichi Hirai, Hidaka, and Nobuyuki Otsuka, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,076
Claims priority, application Japan, Apr. 24, 1981, 56-61488
Int. Cl.³ F16D 3/24
U.S. Cl. 464—145 18 Claims



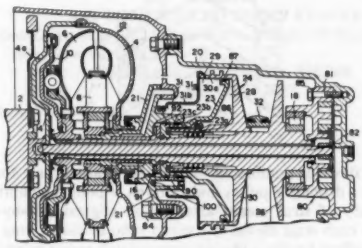
1. A constant velocity universal joint comprising an outer member having an inner spherical surface with a constant radius of curvature, an inner member fitted in said outer member and having an outer spherical surface facing said inner spherical surface of the outer member, said outer spherical surface of said inner member having a constant radius of curvature, said inner and outer members being adapted for relative angular travel about a center of the joint, a cage member interposed between said inner and outer members, said cage member having an outer spherical surface facing the inner spherical surface of the outer member for operative contact engagement therewith and an inner spherical surface facing the outer spherical surface of the inner member for operative contact engagement therewith, said cage member having windows therein, and balls disposed in said windows and projecting outwardly therefrom, said inner and outer members being provided with respective opposed ball grooves in which said balls are engaged, said mutually facing spherical surfaces of the outer member and the cage member being slightly eccentric with respect to one another so that a gap formed between the two spherical surfaces gradually decreases continuously from one end towards the other end of the joint and said surfaces come into pressure contact in a first contact zone proximate said other end, while said mutually facing spherical surfaces of the inner member and the cage member are slightly eccentric with respect to one another so that a second gap formed between these two spherical surfaces gradually decreases continuously from said other end to said one end of the joint and said surfaces come into pressure contact at a second contact zone proximate said one end, said first and second pressure contact zones of said cage respectively with said outer and inner members proximate said ends of the joint maintaining said cage in axial position in said joint while permitting universal movement of said inner and outer members about the joint center with operating engagement of said confronting spherical surfaces of said cage member and said inner and outer members.

4,494,942

CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

Hiroyuki Hirano, Yokosuka; Sigeaki Yamamuro, Zushi; Yoshiro Morimoto, Yokosuka, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 9, 1982, Ser. No. 367,090
Claims priority, application Japan, Apr. 11, 1981, 56-53793
Int. Cl.³ F16H *11/04*
U.S. Cl. 474—28 4 Claims



1. A continuously variable V-belt transmission comprising;
a drive pulley;
a driven pulley;
a V-belt running over said drive pulley, each of said pulleys having an axially fixed conical disc, an axially movable conical disc provided with
a cylinder wall, an axially fixed partition wall sealably fitted within said cylinder wall to define within said cylinder wall a cylinder chamber between said axially fixed partition wall and said axially movable conical disc, and a trough including an annular disc like portion extending inwardly from said cylinder wall to define within said cylinder wall a compensation chamber between said disc like portion of said trough and said axially fixed partition wall;
said trough including a tubular portion extending axially from said disc like portion in a direction remote from said axially fixed partition wall;
said axially fixed partition wall carrying means sealably separating said compensation chamber from said cylinder chamber so as to prevent communication therebetween;
a shift control valve;
means establishing communication between said cylinder chamber and said shift control valve;
a source of lubricating fluid; and
means defining at least one passage establishing communication between said source of lubricating fluid and said compensation chamber, said at least one passage being so oriented as to direct a flow of fluid thrown radially outwardly toward said tubular portion of said trough toward said compensation chamber.

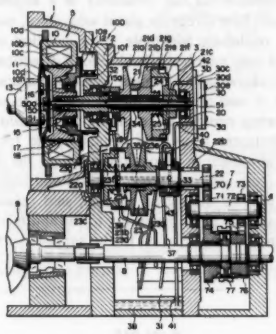
4,494,943

POWER TRANSMISSION DEVICE FOR VEHICLES

Toshihiro Takei; Takahiro Goshima, both of Kariya; Yoshiyuki Hattori, Toyoake, and Kazuma Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 3, 1982, Ser. No. 414,579
Claims priority, application Japan, Sep. 8, 1981, 56-141269; Sep. 8, 1981, 56-141270
Int. Cl.³ F16H *55/52*
U.S. Cl. 474—28 17 Claims

1. A power transmission device for vehicles, comprising:
a housing rotatably supporting a crank shaft of an engine of the vehicle;
a first shaft rotatably supported inside said housing to be coaxial with said crank shaft;
a clutch unit having a drive member arranged inside said housing and coupled to said crank shaft, and a driven member fixed to said first shaft;
a second shaft rotatably supported inside said housing to be parallel to said first shaft;
infinite variable transmission including a drive pulley having a fixed sheave secured to said first shaft and a movable sheave axially movable mounted on said first shaft, a driven pulley having a fixed sheave secured to said second shaft and a movable sheave axially movably mounted on said second shaft, and a V belt which is placed on said drive and driven pulleys through V grooves defined by said fixed and axially movable sheaves of said drive and driven pulleys;



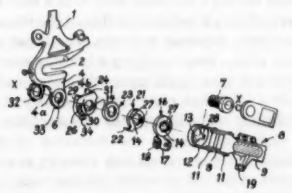
hydraulic piston-cylinder assemblies which are fixed to said movable sheaves and to said first and second shafts associated therewith and which move said movable sheaves towards and away from said fixed sheaves associated therewith;
a rotary hydraulic pump which is disposed at said housing, which has a rotary element to generate a hydraulic pressure upon rotation, and which supplies the hydraulic pressure to said hydraulic piston-cylinder assemlbies; and
a third shaft passing through said first shaft and having one end connected to said crank shaft and the other end connected to said rotary element of said rotary hydraulic pump.

4,494,944

DEVICE FOR MOUNTING A DERAILLEUR ON THE FRAME LUG OF A CYCLE

Maurice E. L. Coué , Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Jun. 28, 1982, Ser. No. 393,070
Claims priority, application France, Jul. 3, 1981, 81 13117
Int. Cl.³ F16H *11/08*
U.S. Cl. 474—82 7 Claims



1. A device for mounting a chain derailleur on a frame lug having a notch of a cycle having a wheel and a wheel spindle engaged in the notch of the lug, said device comprising a base member of the derailleur, a pivot carried by the lug in a position parallel to the spindle for pivotally mounting the base

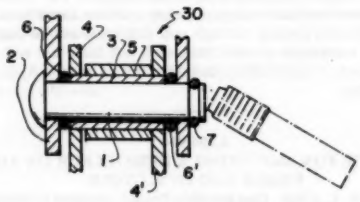
member of the derailleur on the lug, means for pivotally biasing the base member of the derailleur about said pivot toward an operative position of the derailleur, means defining an abutment rigid with the base member of the derailleur, means defining a support surface which is rigidly fixed relative to the frame lug, said operative position being determined by abutment of the abutment against the support surface upon a pivoting of the base member about said pivot in a first direction, a resiliently yieldable retaining means which is fixed in position relative to the frame lug, is in angularly spaced relation to said support surface relative to said pivot and has a retaining position in which retaining position the retaining means is encountered by the abutment in the course of an angular displacement of the base member of the derailleur in a second direction opposed to said first direction about said pivot, said retaining means being resiliently yieldable upon exertion of sufficient torque on said base member in said second direction about said pivot so as to allow said abutment to assume a position on an opposite side of said retaining means relative to said support surface and being capable of resuming said retaining position when said abutment is on said opposite side for resiliently retaining the abutment in a position in which the derailleur is spaced away from said operative position and immobilized so as to give access to the wheel spindle, said retaining means being in substantially close proximity to the abutment when the abutment is an abutting relation to the support surface.

4,494,945

ROLLER CHAIN LINK CONSTRUCTION AND METHOD OF MANUFACTURE

Teiji Ogino, Ishikawa, Japan, assignor to Enuma Chain Manufacturing Co., Ltd., Japan

Filed Jan. 29, 1982, Ser. No. 344,043
Int. Cl.³ F16G *1/22, 5/10, 13/02*
U.S. Cl. 474—231 **7 Claims**



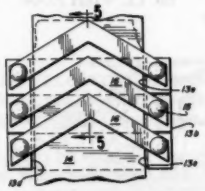
5. A method of assembling a power transmission roller chain link which includes a first pin link plate, first and second spaced-apart substantially parallel pins having first ends connected to the first pin link plate and opposite second ends with an extension having a threaded area with a heat-treated brittle groove area of diameter less than that of the threaded area and the groove area disposed between the thread area and the second end, comprising: applying a bushing over each of said first and second pins; applying a roller over said bushing together with a roller link plate adjacent each end of said roller and press-fitting roller link plates to respective ends of said bushing; thereafter passing the extension of the link pins through openings in a second link plate so as to position the threaded area of the link pin extension exteriorily of the second pin link plate, threadably engaging a nut on the threaded area of said extension to bear over said groove area and against said second link plate and to force said second link plate along the associated link pins to position it adjacent said bushing; threadably disengaging said nut from over said groove area; and thereafter breaking off the extension from the assembly at said groove area.

4,494,946

FLEXIBLE CONTINUOUS TORQUE TRANSMITTING DEVICE

John P. Wilcox, Columbus, Ohio, assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 26, 1981, Ser. No. 296,432
Int. Cl.³ F16G *5/26*
U.S. Cl. 474—242 **5 Claims**



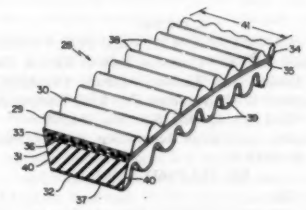
1. A flexible, continuous device for transmitting torque between a driving V pulley and a driven V pulley, comprising a plurality of strut means arranged in aligned side-by-side relation, each strut means at a given ratio of the driving and driven pulleys having a predetermined pitch radius relative to the pulley axes; a continuous flexible band means engaging corresponding surfaces of said strut means; and a member mounted on each strut means and coacting therewith to retain said strut means and said band means in assembled relation, each member having a portion thereof protruding longitudinally in the direction of travel of said band means to at least a second strut means beyond the strut means on which it is mounted whereby when the strut means on which the member is mounted begins exiting a pulley in a non-tangential direction, the protruding portion thereof engages a previously exited strut means and the latter exerts an outward force on said forwardly protruding portion causing a pivoting moment on said strut means to which said member is mounted, whereby the latter strut means exits the periphery of the pulley in a generally tangential direction.

4,494,947

ENDLESS POWER TRANSMISSION V-BELT CONSTRUCTION AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Porter Township, Christian County; Mark P. Foley, Springfield; Gerald C. Hollaway, Springfield; Larry R. Oliver, Springfield; Paul M. Standley, Springfield, and James A. Lewis, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 348,106, Feb. 11, 1982, Pat. No. 4,410,314. This application Aug. 11, 1983, Ser. No. 522,422
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed
Int. Cl.³ F16G *1/10, 1/28*
U.S. Cl. 474—251 **18 Claims**



1. In an endless power transmission V-belt construction formed mainly of polymeric material and having rounded top and bottom teeth respectively extending along the length of the top and bottom surfaces of said belt construction, said belt construction comprising a tension section having said top

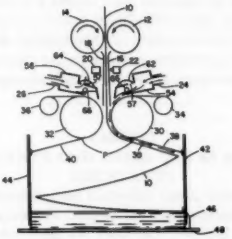
surface, a compression section having said bottom surface, and a load-carrying section disposed intermediate said tension section and said compression section, the improvement wherein the quotient of the top width to belt thickness of said belt construction is approximately 2.0, the quotient of the bottom to top tooth pitch is approximately 1.40, the quotient of the bottom to top tooth depth is approximately 1.77 and the quotient of the belt thickness to flex thickness is approximately 3.98 whereby said belt construction is adapted to be utilized in a continuously variable transmission unit.

4,494,948

AIR CONTROLLED PAPER STACKER

Emil G. Teyssier, Jr., Lansdale, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,209
Int. Cl.³ B31F *7/00*
U.S. Cl. 493—11 **5 Claims**



1. A paper stacker for the refolding of a continuous unfolded paper form comprising:

a first and a second forced air supply;

a first and a second curved surface closely positioned one to another in a facing relationship;

paper form receiving means positioned to receive and stack the continuous paper form in an original configuration; said receiving means having first and second adjustable side means for accommodating various size refolded forms;

first and second extendable supply means for supplying sheets having an adjustable length, said sheets covering said first and second curved surfaces, respectively, and attached to said first and second side means, respectively, said sheets having lengths adjustable in response to adjustment of said side means; and

means for controlling forced air, said means having an input and output, said input of said forced air control means coupled to movement of said paper form to receive location and speed information therefrom, said output of said forced air control means coupled to said first and second forced air supply, such that the location and speed information received by said forced air control means causes said forced air supply to alternately operate to attach to said curved surfaces and said sheets for urging said continuous form over said first and second curved surfaces and along said sheets toward said side means in an alternating manner whereby said unfolded form is forced to refold in the original configuration.

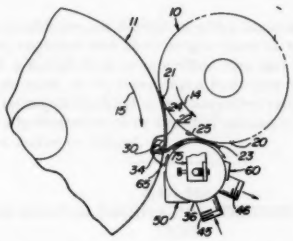
4,494,949

SHEET FOLDING APPARATUS AND METHOD

William D. Baley, Dallas, Tex., assignor to The Lehigh Press, Inc., Pennsauken, N.J.

Filed Jan. 10, 1983, Ser. No. 456,751
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—432 **17 Claims**

1. In a sheet folding machine including rotary tangential tucker and jaw rolls for respective edgewise feeding of a sheet to the nip of said rolls and there gripping a bent portion of said sheet intermediate its leading and trailing edges, the improvement comprising a working surface on the downstream side of and facing toward said nip, and air stream producing means associated with said working surface for passing an air stream along said working surface in the direction away from said jaw roll, to maintain the leading sheet edge portion smoothly extended during folding back on the trailing edge sheet portion.



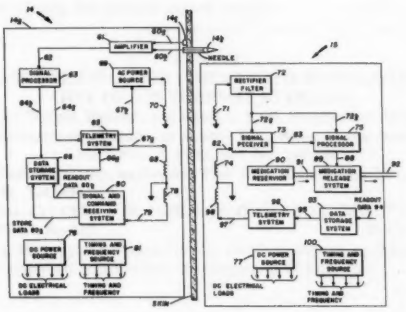
10. A method of folding a sheet comprising: feeding a sheet edgewise along a first path, gripping an intermediate portion of the sheet, moving the sheet by the gripped portion along a second path away from said first path with the leading and trailing edges of the sheet free, and directing a fluid stream counter to and away from said second path to extend and guide the leading edge portion of the sheet back against the trailing edge sheet portion.

4,494,950

PLURAL MODULE MEDICATION DELIVERY SYSTEM

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Jan. 19, 1982, Ser. No. 340,817
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—66 **6 Claims**



1. A medication delivery system for delivering medication into a patient, said medication delivery system comprising:

a sensor module including,

a sensor module housing adapted to be externally mounted on a patient's skin,

a needle adapted to be buried just beneath said patient's skin;

a glucose sensor physically connected to the tip of said needle,

a telemetry means mounted in said sensor module housing and electrically connected to said glucose sensor, for transmitting a signal carrying sensed glucose level information; and

a medication release module adapted to be implanted in said

patient for dispensing medication into said patient, including,

a medication release module housing adapted to be implanted in said patient,

a receiver means mounted in said medication release module housing for receiving signals transmitted by said telemetry means and for decoding sensed glucose level information,

a delivery means mounted in said housing and connected to said receiver means for causing medication to be delivered into said patient in accordance with said sensed glucose level information.

4,494,951
FLAMEPROOFING TEXTILES

Robert Cole, Dudley, and James E. Stephenson, Birmingham, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Sep. 24, 1982, Ser. No. 423,052

Claims priority, application United Kingdom, Sep. 28, 1981, 8129272

Int. Cl.³ D06M *13/26;* **C09K** *3/28;* **B05D** *3/04*

U.S. Cl. 8—195 **16 Claims**

1. A process for flameproofing a cellulosic textile fabric, which comprises impregnating said fabric with an aqueous solution of pH 4–8 comprising a tetrakis(hydroxymethyl phosphonium) compound or a precondensate thereof with a nitrogen containing compound in a molar ratio of nitrogen containing compound to tetrakis(hydroxymethyl)phosphonium group of 0.05–0.5:1, drying the impregnated fabric, treating the fabric by passing it in contact with at least one duct having at least one orifice, through which gaseous ammonia is caused to issue and pass through the fabric, then wetting the treated fabric to give it a moisture content of 10–60%, and then passing said wetted fabric in contact with at least one duct having at least one orifice through which gaseous ammonia is caused to issue and pass through the fabric to give a cured fabric.

4,494,952
WETTING AGENTS AND THEIR USE AS MERCERIZING ASSISTANTS

Heinz Abel, Reinach, and Christian Guth, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,600

Claims priority, application Switzerland, Sep. 8, 1982, 5336/82

Int. Cl.³ D06M *1/02;* **B01F** *17/02, 17/12*

U.S. Cl. 8—125 **30 Claims**

1. A wetting agent which comprises

(a) a sulfate of a fatty alcohol having 6 to 18 carbon atoms,

(b) a phosphate of a monoalcohol having 4 to 12 carbon atoms,

(c) an alcohol having 6 to 18 carbon atoms or a condensation product thereof with paraformaldehyde and

(d) a hydrotrope.

4,494,953
2,4-DIHYDROXYDIPHENYLAMINES AND HAIR DYEING COMPOSITIONS AND METHOD

Andreé Bugaut, Boulogne, and Francoise Estradier, Paris, both of France, assignors to L'Oreal, Paris, France

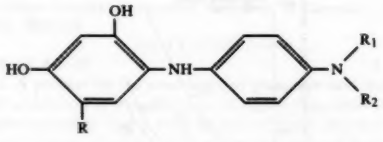
Division of Ser. No. 27,064, Apr. 4, 1979, Pat. No. 4,263,213. This application Jan. 15, 1981, Ser. No. 225,355

Claims priority, application France, Apr. 6, 1978, 78 10209

Int. Cl.³ A61K *7/13;* **C09B** *57/00*

U.S. Cl. 8—408 **40 Claims**

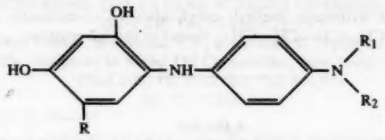
1. A 2,4-dihydroxydiphenylamine of the formula:



(I)

or an acid addition salt thereof, in which formula R_1 and R_2 form, together with the nitrogen atom to which they are bonded, a morpholino or piperidino ring and R represents a hydrogen atom.

4. A composition suitable for dyeing keratin fibers which comprises at least one 2,4-dihydroxydiphenylamine of the formula:



(I)

or an acid addition salt thereof, in which formula either R_1 and R_2 form, together with the nitrogen atom to which they are bonded, a morpholino or piperidino ring and R represents a hydrogen atom, or R_1 represents a hydrogen atom, R_2 represents a tetrahydrofurfuryl or methoxyethyl radical and R represents a hydrogen atom or a methyl radical, together with an aqueous carrier or diluent.

4,494,954
PROCESS FOR PRODUCING COLORED CONTACT LENS

Taro Suminoe, Tokyo; Tetsuo Ito, Machida; Yasuhiro Kiyomatsu, Yokohama, and Takao Shimizu, Toda, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Ricky Contact Lens Research Institute Inc., both of Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,040

Claims priority, application Japan, Dec. 16, 1981, 56-201450

Int. Cl.³ B29D *11/00;* **D06P** *1/90, 3/00*

U.S. Cl. 8—507 **24 Claims**

1. A process for producing a color shaped article, comprising:

(a) immersing a shaped article consisting of a substantially non-hydrous polymer of at least one monomer selected from the group consisting of acrylates and methacrylates in a dyeing solution prepared by dissolving a water-soluble dye in a solvent capable or swelling said polymer; said solvent being used alone or in combination with up to 20 parts by weight of water or up to 10 parts by weight of an aqueous alkaline reducing solution per 100 parts by weight of the solvent,

(b) swelling and coloring the shaped article, and then

(c) drying the swollen shaped article.

4,494,955
MASS DYEING OF POLYESTER WITH PYRROCOLINE DYE OF HIS THERMAL STABILITY

Peter Bitterli, Reinach, and Bansi L. Kaul, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

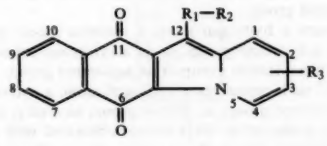
Filed Nov. 7, 1983, Ser. No. 549,076

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241494

Int. Cl.³ C08J *3/20;* **C08K** *5/34;* **C08L** *67/02;* **C09B** *57/00*

U.S. Cl. 8—512 **20 Claims**

1. Mass-dyed polyester having dissolved therein, as dyestuff, a compound or a mixture of compounds of formula I



I

wherein

R_1 is a direct bond, —CONH— or —NHCO—,

R_2 is C_{1-4}alkyl; C_{1-4}alkyl mono-substituted by chlorine, bromine or C_{1-3}alkoxy; phenyl or naphthyl; phenyl or naphthyl substituted by up to two substituents selected from chlorine, bromine, methyl, methoxy, nitro, cyano, carboxy and alkoxy-C_{1-3}-carbonyl; or cyano

provided that R_1 is a direct bond when R_2 is cyano

and

R_3 is hydrogen; methyl; ethyl; alkoxy-C_{1-3}-carbonyl; or —CH=CH—CH=CH— bound in the 1,2-position.

4,494,956

PROCESS FOR PAD DYEING CELLULOSIC TEXTILE MATERIALS

Paul Schäfer, Riehen, and Hans-Ulrich Berendt, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,121

Claims priority, application Switzerland, Dec. 14, 1982, 7268/82; Oct. 6, 1983, 5431/83

Int. Cl.³ D06P *1/38, 1/52, 1/607*

U.S. Cl. 8—543 **16 Claims**

1. A process for dyeing textile materials which consist wholly or partly of cellulose fibres with substantive dyes or reactive dyes, which process comprises padding the cellulosic materials with an aqueous dye liquor which contains, in the addition to the dye, a graft polymer obtained from an adduct of an alkylene oxide with an at least trihydric aliphatic alcohol of 3 to 10 carbon atoms and acrylamide or methacrylamide, and subsequently fixing the dye by a heat treatment or by the cold pad-batch method.

4,494,957

DYE COMPOSITIONS FOR POLYESTER FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Research Association of Synethtic Dyestuffs, Tokyo, Japan

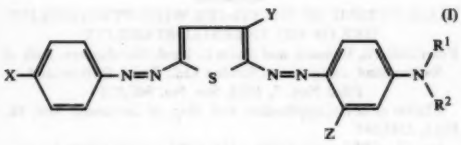
Filed May 10, 1983, Ser. No. 493,314

Claims priority, application Japan, May 17, 1982, 57-82788; Feb. 4, 1983, 58-17208

Int. Cl.³ C09B *29/08;* **D06P** *1/04, 3/54*

U.S. Cl. 8—639 **5 Claims**

1. A dye composition for dyeing polyester fibers comprising at least one disazo dye represented by the formula (I):



(I)

wherein

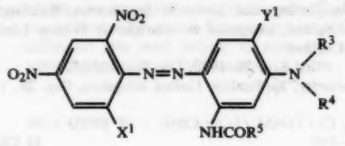
X represents a hydrogen atom, a chlorine atom, a nitro group or a trifluoromethyl group;

Y represents a cyano group, an alkoxycarbonyl group or a carbamoyl group;

Z represents a hydrogen atom, a chlorine atom, methyl group, a hydroxyl group, or an alkyl group substituted with a formylamino group or an acylamino group;

R^1 and R^2 each represents a hydrogen atom; a cyclohexyl group; an aryl group; an alkenyl group; an aralkyl group; an alky group; or an alkyl group substituted with a hydroxyl group, a lower alkoxy group, a lower alkoxyalkoxy group, a lower alkanoyloxy group, a formyloxy group, a chloro-lower alkanoyloxy group, an aryloxyloxy group, an aryloxy group, a lower alkoxycarbonyl group, a lower alkoxyalkoxycarbonyl group, an aralkyloxycarbonyl group, a lower alkoxycarbonyloxy group, a halogen atom, a cyano group, an alkenyloxy group or a tetrahydrofuryl group; and

at least one monoazo dye represented by the formula (II):



(II)

wherein

X^1 represents a halogen atom;

Y^1 represents a hydrogen atom, an alkoxy group or an alkoxyalkoxy group;

R^5 represents a lower alkyl group;

R^3 and R^4 each represents a hydrogen atom, an aryl group, an alkenyl group, a cyclohexyl group, an aralkyl group, an alkyl group, or an alkyl group substituted with a hydroxyl group, a lower alkoxy group, a lower alkoxyalkoxy group, a lower alkanoyloxy group, a chloro-lower alkanoyloxy group, an aryloyloxy group, an aryloxy group, a lower alkoxycarbonyl group, a lower alkoxyalkoxycarbonyl group, an aralkyloxycarbonyl group, a lower alkoxycarbonyloxy group, a halogen atom, a cyano group, an alkenyloxy group or a tetrahydrofuryl group; the proportion of said monoazo dye and said disazo dye in said composition being about 25:75 to 75:25.

4,494,958

BLENDING ASPHALTITE WITH LIGNITE OR BITUMINOUS COAL

Thomas J. Doolin, 321 W. Sanner St., Somerset, Pa. 15501

Filed Aug. 2, 1983, Ser. No. 519,703

Int. Cl.³ C10L *9/10*

U.S. Cl. 44—1 G **4 Claims**

1. A composition comprising a blend mixture of particles of asphaltite and lignite or bituminous coal in which the asphaltite is at least 50% by weight of the mixture.

4,494,959

COAL-WATER SLURRY AND METHOD FOR ITS PREPARATION

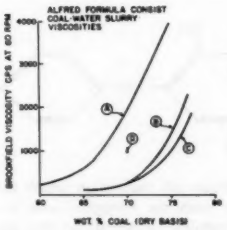
James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation, Inc., Alfred, N.Y.

Continuation of Ser. No. 288,737, Jul. 31, 1981, Pat. No. 4,416,666, which is a continuation-in-part of Ser. No. 088,815, Oct. 26, 1979, Pat. No. 4,282,006, which is a continuation-in-part of Ser. No. 975,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application Jun. 30, 1983, Ser. No. 509,713

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **15 Claims**



1. A coal-water slurry comprised of from about 65 to about 85 weight percent of solids by weight of slurry, from about 15 to about 35 weight percent of carrier water by weight of

slurry, and from about 0.01 to about 4.0 weight percent of polyelectrolyte dispersing agent by weight of dry coal in said slurry, wherein:

(a) said coal-water slurry has a Brookfield viscosity of less than 4,000 centipoise when tested at a solids content of 75 weight percent, ambient temperature, and 60 revolutions per minute;

(b) said coal-water slurry has a yield stress of from about 0.1 to about 10 Pascals;

(c) from about 5 to about 36 weight percent of the particles of coal in said slurry are of colloidal size, and being smaller than about 3 microns, and said colloidal sized particles of coal have a net zeta potential in said coal-water slurry of from about 15 to about 85 millivolts;

(d) at least about 85 weight percent of the particles of coal in said coal-water slurry have a particle size less than 300 microns; and

(e) said coal-water slurry comprises a compact of finely-divided particles of coal dispersed in said carrier water; and (f) said compact of finely divided particles of coal has a particle size distribution substantially in accordance with the following formula:

$$CPFT = \frac{D^n - D_S^n}{D_L^n - D_S^n} \cdot 100,$$

CPFT is the cumulative weight percent, dry basis, of particles finer than a particle of stated size, D,

D is the diameter of any particle in the compact,

D_L is the diameter of the largest particle in the compact, sieve size or its equivalent, being from about 38 to about 400 microns,

D_S is the diameter of the smallest particle in the compact, being from about 0.01 to about 0.4 microns, and

n is numerical exponent, with n being from about 0.2 to about 0.5 and with all diameters sized in microns.

4,494,960

PROCESS FOR THE PRODUCTION OF PUMPABLE COAL SLURRIES

Wilfried Dolkemeyer, Bornheim-Udorf; Karl-Heinz Keim, and Ewald Meisenburg, both of Heimerzheim, all of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG, Stuttgenweg, Fed. Rep. of Germany

PCT No. PCT/DE81/00211, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/02056, PCT Pub. Date Jun. 24, 1982

Continuation of Ser. No. 406,247, Aug. 4, 1982, abandoned PCT Filed Dec. 3, 1981, Ser. No. 626,597

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046248

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—51 **9 Claims**

1. A process for the production of pumpable coal slurries in oils which boil at a temperature of higher than about 200° C., characterized in that a first amount of finely divided coal is mixed into an oil which boils at a temperature of higher than about 200° C. to produce a slurry, the proportion of coal in said slurry being such as not to exceed the limit of pumpability, the slurry is treated for a period of from about 0.5 to 15 minutes at a temperature of from 280° to 450° C., and such a further amount of finely divided coal is mixed into the slurry after the above-indicated treatment as to increase the proportion of coal in the slurry without exceeding the limit of pumpability.

4,494,961

INCREASING THE CETANE NUMBER OF DIESEL FUEL BY PARTIAL OXIDATION

Chaya Venkat, Bellemead, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,115

Int. Cl.³ C10L *1/30*

U.S. Cl. 44—57 **12 Claims**

1. A method for improving the cetane number of a low hydrogen content, highly aromatic diesel boiling range fuel by heating same under mild oxidation conditions in the presence of a catalyst system comprising (1) an alkaline earth metal permanganate, (2) an oxide of a metal group Groups IB, IIB, IIIB, IVB, VB, VIB, VIIB or VIII of the Periodic Table, or (3) a mixture of (2) and an alkali metal or alkaline earth metal oxide or salt.

4,494,962

FUEL PRODUCT

George M. Christie, 33 Claude, Beaconsfield, Quebec, Canada (H9W 4E9), and James M. Holmes, 60 Grove Ave., Ottawa, Ontario, Canada (K15 3A8)

Filed Nov. 24, 1982, Ser. No. 444,356

Int. Cl.³ C10L *5/14, 5/36*

U.S. Cl. 44—15 D **2 Claims**

1. A method of producing a composite fuel log comprising the steps of preparing a slurry of water and used newsprint paper fibers; grinding coal to a mesh size of between 10 microns and 3 mm; adding the coal particles to the slurry to a proportion of between 1% and 10% paper fibers and 90% to 98% coal particles; mixing the coal slurry; adding powdered limestone to the slurry in an amount of 1% to 10% by weight; pouring the slurry into an open ended mould; applying negative pressure at least to the open end of the mould to reduce the water content to at least 50% humidity; removing the so-formed log from the mould; and drying the log to reduce the moisture content below 30% humidity and placing the log in a hermetically sealed envelope.

4,494,963

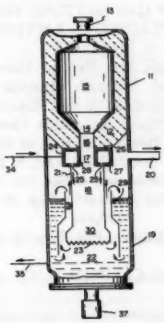
SYNTHESIS GAS GENERATION APPARATUS

Erwin A. Reich, Stamford, Conn., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Jun. 23, 1983, Ser. No. 507,266

Int. Cl.³ C10J *3/48, 3/52, 3/84*

U.S. Cl. 48—69 **2 Claims**



1. A synthesis gas generation apparatus including

means defining a vertically extending synthesis gas generation zone having a lower outlet through which hot synthesis gas is withdrawn;

means defining a vertically extending quench chamber below said vertically extending synthesis gas generation zone and having a hot synthesis gas inlet therein joining said lower outlet of said gas generation zone whereby hot

synthesis gas is admitted to said quench chamber, said quench chamber further including a body of cooling liquid therein;

an attenuated vertically extending dip tube in said quench chamber having inner and outer perimetric surfaces, and an upper inlet end through which hot synthesis gas entering said quench chamber is admitted to said dip tube through which said gas moves toward an oulet end of said dip tube located within said body of liquid;

a quench ring adjacent to the inner perimetric surface at the inlet end of said dip tube for directing a curtain of liquid along the inner perimetric surface of said dip tube and toward the outlet end of said dip tube;

means defining an expanded outlet portion of said dip tube including the outlet end thereof, said expanded portion having an area between about 140 to 400% of the area of the non-expanded portion of the dip tube; and

serrations on the outlet end of said expanded outlet portion of said dip tube;

whereby charge gas admitted to the inlet end of said dip tube may be passed downwardly through (i) a first contacting zone in said dip tube wherein it is contacted with a film of cooling liquid passing downwardly therethrough, (ii) a second contracting zone in said expanded portion of said dip tube wherein the velocity of said downwardly descending charge gas is decreased, and then through (iii) a third contacting zone adjacent to the lower outlet end of said dip tube wherein gas is contacted with a body of cooling liquid, and thence to the quench gas outlet of said quench chamber.

4,494,964

POROUS CERAMIC ABRASIVE WHEEL OR CERAMIC FILTER

Stig L. Ohlsson, Ljungbyhed, and Jan-Olov K. Berthou, Hässleholm, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Apr. 5, 1984, Ser. No. 597,023
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—296 **1 Claim**

1. A porous ceramic abrasive wheel or ceramic filter comprising pores formed therein from fine-grained pentaerythritol, dipentaerythritol, or a mixture thereof, as a pore forming additive.

4,494,965

DEVICE UTILIZED FOR SEPARATION OF HYDROGEN ISOTOPES FROM A GAS MIXTURE FOR SEPARATION OF ISOTOPES CONTAINED IN A HYDROGEN ISOTOPE MIXTURE

Imran Ali-Khan, Jülich, Fed. Rep. of Germany; Karl-Jürgen Dietz, East hendred, England; Francois Waelbroeck, and Peter Wienhold, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 310,076, Oct. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,863, Dec. 18, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 430,042

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2854682

Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 **13 Claims**

1. A method for separating hydrogen isotopes from a gas mixture containing a hydrogen isotope mixture, which comprises the steps of:

supplying said gas mixture into a first chamber;

dissociating molecular bound hydrogen contained in said gas mixture in the gaseous space;

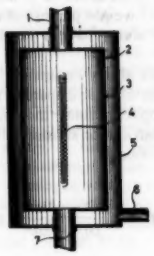
allowing said dissociated hydrogen to penetrate a permeable wall arranged between said first chamber and a second chamber said wall being permeable for atomic hydrogen and less permeable for molecular hydrogen, and allowing the dissociated hydrogen to recombine to form hydrogen molecules;

accumulating said hydrogen molecules in said second chamber until a predetermined pressure has been reached, and

withdrawing said hydrogen molecules from said second chamber.

11. An apparatus for separating hydrogen isotopes from a gas mixture to separate isotopes contained in a hydrogen isotope mixture, which apparatus comprises in combination:

a first chamber and second chamber respectively closable by valves and surrounded on all sides by walls, said first chamber being connected with a gas supply line and a gas discharge line;



a partition separating said chambers and consisting of material differing from palladium, at least a portion of said partition being permeable for atomic hydrogen and less permeable for molecular hydrogen, said second chamber being adapted to collect isotope mixture passing through said permeable portion of said partition, and being adapted to be evacuated, the remaining walls of said chambers comprising material which is at most only poorly permeable for hydrogen isotopes; and

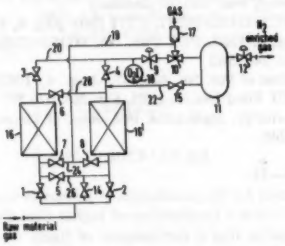
a device independent of the partition arranged in said first chamber, utilizable for a dissociation of molecular hydrogen in the gaseous space of said chamber.

4,494,966

PROCESS FOR NITROGEN ENRICHMENT

Masakazu Umeki, Yawata, Japan, assignor to The BOC Group plc, London, England

Filed Jul. 1, 1983, Ser. No. 510,464
Claims priority, application Japan, Jul. 7, 1982, 57-118064
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **6 Claims**



1. A process for the separation of a gas mixture comprising the steps of:

(a) repeatedly performing a cycle of operations in employing a first vessel containing adsorbent which adsorbs one component of a gas mixture more readily than another or the other component of the gas mixture, the cycle of operations comprising:

(i) passing the gaseous mixture under pressure through the vessel whereby said one component is adsorbed and a gas stream relatively lean in the adsorbed component flows out of the bed as a product gas;

(ii) regenerating the adsorbent by desorbing gas therefrom and causing a gas stream relatively rich in the desorbed gas to flow out of the vessel;

(b) repeatedly performing such a cycle of operations employing a second vessel containing said adsorbent, the cycles being phase relative to one another such that at no time is step (i) or step (ii) in one cycle performed simultaneously with the corresponding step in the other cycle;

(c) passing the product gas stream into a reservoir;

(d) placing the two beds in flow communication with each other at intervals between successive adsorption steps;

(e) halting the process during an interval between successive adsorption steps when the two beds are placed in flow communication, exhausting gas remaining in the vessels from the said vessels countercurrently to the flow of the gas mixture to thereby depressurize the vessels; and

(f) purging the depressurized vessels by passing product gas from said reservoir to said vessels.

4,494,967

PROCESS FOR THE REMOVAL OF IMPURITIES FROM A GAS STREAM CONTAINING SOLVENT VAPORS

Peter Barth, Neuwied, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

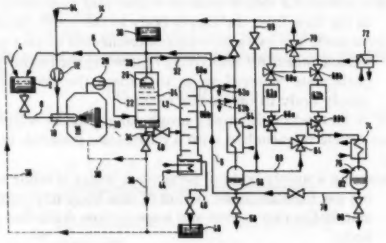
PCT No. PCT/EP82/00171, § 371 Date Apr. 14, 1983, § 102(e) Date Apr. 14, 1983, PCT Pub. No. WO83/00641, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 13, 1982, Ser. No. 502,018

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132292

Int. Cl.³ B01D *53/04, 47/05*

U.S. Cl. 55—74 **4 Claims**



1. A process for removing impurities from a gas stream containing one or more solvent vapors, said impurities being suspended in a gas stream as liquid or solid particles, comprising the steps of washing the gas stream with a condensate of one or more solvent vapors contained in the gas stream, said condensate being substantially free of impurities and including one or more auxiliary agents which bind the impurities to be removed from the gas stream, feeding the solvent concentrate to the gas stream after separation of the impurities and removing said concentrate from the gas stream through condensation and adsorption together with the originally contained solvent vapors and the parts which vaporize during the washing step and returning the solvent concentrate to a mixing vessel either together with the removed impurities or after separation of the impurities.

4,494,968

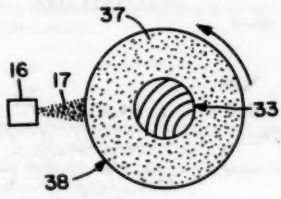
METHOD OF FORMING LAMINATED SINGLE POLARIZATION FIBER

Venkata A. Bhagavatula, Corning, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,325

Int. Cl.³ C03B *37/075;* **G02B** *5/172*

U.S. Cl. 65—3.12 **22 Claims**



1. In a method of forming an optical fiber comprising the steps of

providing an elongated core structure,

applying a layer of cladding glass to said core structure, and

forming an optical fiber from the resultant preform,

the step of providing a core structure being such that it comprises

(a) providing a substrate,

(b) forming on said substrate a laminated glass structure, adjacent glass lamina of the laminated glass structure having different refractive indices, and

(c) removing one or more azimuthally asymmetric laminated core structures from the laminated glass structure.

4,494,969

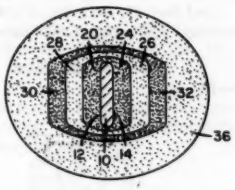
METHOD OF FORMING LAMINATED SINGLE POLARIZATION FIBER

Venkata A. Bhagavatula, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,326

Int. Cl.³ C03B *37/075;* **G02B** *5/172*

U.S. Cl. 65—3.12 **6 Claims**



1. In a method of forming an optical fiber comprising the steps of

providing an elongated core structure,

applying a layer of cladding glass to said core structure, and

forming an optical fiber from the resultant preform,

the step of providing the core structure being such that it comprises

providing an elongated mandrel having first and second parallel longitudinally extending planar sidewalls,

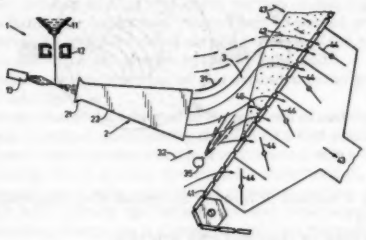
depositing on said first and second sidewalls a plurality of planar layers of glass particles, adjacent ones of which layers have different refractive indices, and

consolidating said glass particles to form a core structure having a plurality of parallel dense glass laminae.

4,494,970
APPARATUS FOR PRODUCTION OF FIBER MATS

Edgar Muschelknautz, Leverkusen, and Norbert Rink, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 251,807, Apr. 7, 1981, Pat. No. 4,343,639.
This application Feb. 8, 1982, Ser. No. 346,786
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016114; Jun. 20, 1980, 3023016
Int. Cl.³ C03B 37/06
U.S. Cl. 65—9 5 Claims

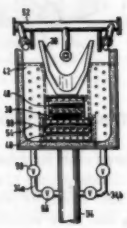


1. An apparatus for the production of mats made of organic or inorganic fibers, consisting essentially of a member forming a channel, means for providing and introducing a flowing dispersion of fibers and gas into said channel, a perforated conveyor belt at an angle of about 90° to 150° relative to the channel, said conveyor belt being spaced from the outlet of the channel so as to allow surrounding air to enter into the open space between channel and conveyor belt, a curved deflection and guiding member positioned on one side of the channel outlet traversely to the conveyor belt, and means for removing the gas by suction below the conveyor belt, channel, deflection member and suction means being in positions relative to each other that gas flows from the channel outlet to the conveyor belt in an S-shaped path.

4,494,971
PROCESS AND APPARATUS FOR GRANULATION OF SLAG

Guido Monteyne, Lembeke, Belgium; Marc Calmes, Luxembourg, and Robert Schmeler, Dalheim, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Nov. 17, 1982, Ser. No. 442,456
Claims priority, application Luxembourg, Nov. 18, 1981, 83768
Int. Cl.³ C03B 19/08
U.S. Cl. 65—19 25 Claims



1. In a process for the liquid granulation of slag wherein molten slag from a vessel is caused to drop into a granulation enclosure into which at least two currents of water are injected and from which a slurry of granulated slag and water is evacuated, the steps of:

determining the output of molten slag;

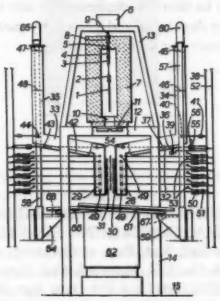
keeping the flow rate of a first of said currents constant at a rate commesurate with requirements for granulation of a first amount of molten slag; and

varying the flow rate of a second current of water automatically between zero or a predetermined minimum and a higher level in accordance with changes in the output of molten slag to maintain a volume of water flow sufficient for granulation of the slag.

4,494,972
THERMALLY TOUGHENING GLASS

Brian Marsh, Lancashire; Malcolm J. Rigby, Merseyside, and Peter Ward, Lancashire, all of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Jan. 26, 1983, Ser. No. 461,371
Claims priority, application United Kingdom, Feb. 1, 1982, 8202768; Oct. 11, 1982, 8229004
Int. Cl.³ C03B 27/02, 27/04
U.S. Cl. 65—114 17 Claims



1. Apparatus for thermally toughening glass comprising:

means for containing a supply body of particulate material;

means for generating a flow of mobile aerated particulate material from that supply body;

nozzle means for projecting particulate material of said flow towards the glass to be toughened;

gas permeable means located within said generating means in the flow from the supply body to the nozzle means; and

switchable gas extraction means connected to said gas permeable means for selectively regulating the mobility of the particulate material so as to initiate the flow from the supply body to the nozzle means.

8. A method of thermally toughening glass in which a hot glass article is quenched with a particulate material, comprising:

aerating a supply body of particulate material while extracting gas from an outlet region of that body to compact the material in that region and impede flow from that supply body;

switching from said gas extraction to gas supply to that outlet region to initiate a flow of aerated particulate material from that supply body; and

directing that flow towards the hot glass article and sustaining that flow for a time sufficient to induce toughening stresses in the glass.

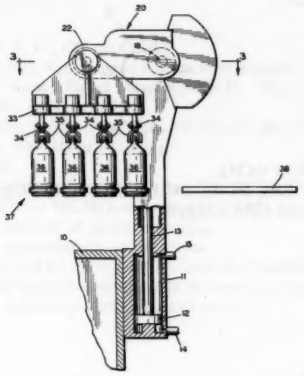
4,494,973
TAKE-OUT ARM FOR BOTTLE FORMING MACHINE

Jack I. Perry, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 6, 1983, Ser. No. 501,689
Int. Cl.³ C03B 9/44
U.S. Cl. 65—260 15 Claims

1. A take-out apparatus for moving a plurality of newly formed glass articles from the blow mold to a cooling dead

plate, comprising a support positioned intermediate the mold and dead plate, a fixed, horizontal shaft extending from said support, a take-out arm pivotally connected to said shaft, said arm comprising a horizontally extending casting, means pivotally supporting one end of said arm on said shaft, a first vertical member fixed to the axis of said shaft, a second vertical member pivotally mounted intermediate its length in the other end of said arm, parallel linkage means extending between said members for maintaining said members parallel, plural take-out tongs mounted to said second member and counterweight means connected to said arm and extending out beyond the axis of said shaft on the side opposite said take-out tongs.



4,494,974

FOREHEARTH FOR CONDITIONING GLASS

Peter Vilk, London, and Alan Stephens, Greenford, both of England, assignors to B.H.F. (Engineering) Ltd., Middlesex, England

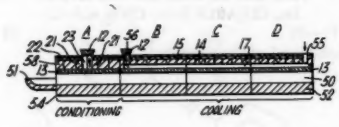
PCT No. PCT/GB82/00295, § 371 Date Jun. 16, 1983, § 102(e) Date Jun. 16, 1983, PCT Pub. No. WO83/01440, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 19, 1982, Ser. No. 510,449

Claims priority, application United Kingdom, Oct. 19, 1981, 8131468

Int. Cl.³ C03B 5/23

U.S. Cl. 65—337 **6 Claims**



1. A forehearth for use in glass production, which forehearth comprises:

a refractory trough for molten glass comprising longitudinally disposed along it a cooling section and a conditioning section and having an insulating roof thereover;

means for heating glass in the trough; and

means in said cooling section for blowing cooling air longitudinally with respect to the direction of glass flow within the forehearth across the inside forehearth roof surface to cool the glass surface by heat exchange radiation; the cooling section comprising at least two longitudinally disposed zones which have different degrees of insulation from each other.

4,494,975

COMPOSING COMPOSITIONS

Marcel F. L. P. De Boodt, Gent, and Omer F. Verdonck, Oostakker both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Dec. 2, 1982, Ser. No. 446,291

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139756

Int. Cl.³ C05F 9/04

U.S. Cl. 71—25 **20 Claims**

1. A composting composition comprising a mixture of biomass and a petroleum sludge.

4,494,976

FERTILIZERS CONTAINING NITROGEN AND MICRONUTRIENTS

Peter S. Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 259,067, Apr. 30, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 471,452

Int. Cl.³ C05C 9/00

U.S. Cl. 71—28 **7 Claims**

1. A method for producing free-flowing nitrogenous chemical fertilizer particles, containing micronutrients, comprising the steps of:

(a) coating urea particles with a metal-containing component consisting essentially of powdered oxides of one or more metals selected from the group consisting of iron, zinc, manganese, molybdenum, copper, boron, and cobalt;

(b) heating the coated particles for a time and at a temperature below the melting point of urea so as to effect a condensation reaction between the metal-containing component of the coating and the urea in the coated particle; and

(c) recovering a particulate product without drying, the particles being resistant to caking and crushing, and having urea nitrogen and micronutrient which are readily plant available.

4,494,977

QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

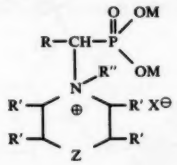
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,258, Aug. 9, 1978, Pat. No. 4,259,483. This application Sep. 15, 1980, Ser. No. 187,390

Int. Cl.³ A01N 43/84

U.S. Cl. 71—67 **8 Claims**

1. A microbiocidal process which comprises treating a water or hydrocarbon system with a microbiocidally effective amount of a compound of the formula



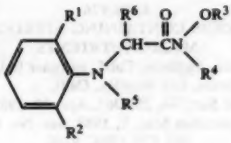
where R and R″ are members selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and hydroxyphenyl and from the group consisting of alkyl, aralkyl, cycloalkyl, alkenyl and alkynyl, respectively, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety and X is a halide, acetate, sulfonate or arylsulfonate.

4,494,978
HERBICIDAL N-(N'-HYDROCARBYLOXYCARBAMYLALKYL)-2,6-DIALKYL-ALPHA-HALOACETANILIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1976, Ser. No. 755,883
The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.
Int. Cl.³ A01N 37/22
U.S. Cl. 71—117 7 Claims

1. A method for the control of undesirable vegetation which comprises applying to said vegetation or its habitat a phytotoxic effective amount of a compound having the formula:



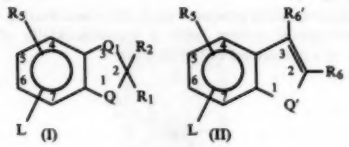
wherein R^1 is alkyl of 1 to 6 carbon atoms; R^2 is alkyl of 1 to 6 carbon atoms; R^3 is alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 4 chlorine or bromine, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, phenyl, substituted phenyl having 1 or 2 substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms, benzyl, or substituted benzyl having 1 or 2 ring substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms; R^4 is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, phenyl, substituted phenyl having 1 or 2 substituents selected from the group of fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms, benzyl, substituted benzyl having 1 or 2 ring substituents selected from fluoro, chloro, bromo or alkyl of 1 to 3 carbon atoms; and R^5 is haloacetyl of 1 to 3 halo groups selected from fluoro, chloro or bromo; R^6 is hydrogen or alkyl of 1 to 6 carbon atoms.

4,494,979
BENZOFURAN SULFAMATES

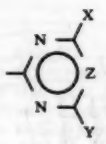
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 286,602, Jul. 24, 1981, abandoned. This application Jun. 15, 1982, Ser. No. 387,951
Int. Cl.³ C07D 405/12, 409/12; A01N 43/54, 43/66
U.S. Cl. 71—92 13 Claims

1. A compound of the formula:



wherein
Q is O, S or SO_2;
Q_1 is CR_3R_4 or O;
L is $OSO_2NHCONHA$;
R_1 is H or C_1–C_3 alkyl;
R_2 is H or CH_3;
R_3 is H or CH_3;
R_4 is H or CH_3;
R_5 is H, CH_3, OCH_3, Cl, Br, NO_2, CO_2R_7, SO_2R_8, OSO_2R_9 or $SO_2NR_{10}R_{11}$;
R_6 is H or C_1–C_3 alkyl;
R_6' is H or CH_3;
R_7 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_8 is C_1–C_3 alkyl;
R_9 is C_1–C_3 alkyl or CF_3;
R_{10} and R_{11} are independently C_1–C_2 alkyl;
A is



X is CH_3 or OCH_3;
Y is Cl, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, $CH(OCH_3)_2$ or

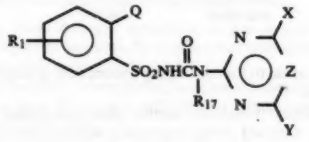
and
Z is CH;
provided that
(1) L is fixed at the 4- or 7-position; and when L is at the 4-position, then R_5 is at the 5-position, and when L is at the 7-position, then R_5 is at the 6-position;
(2) in Formulae I and II, when Q is O and L is in the 4-position, and R_5 is other than H, then R_1 and R_6 are other than H;
(3) in Formula II, when Q is O and L is in the 7-position, and R_5 is other than H, then R_6 and R_6' are other than H;
(4) in Formula II, when Q is S or SO_2 and R_5 is other than H, Br or NO_2, then R_6 and R_6' are other than H;
(5) in Formula I, when Q is S, then R_5 is other than SO_2R_8;
(6) when Q_1 is O, then Q is O and R_5 is H; and
(7) the total number of carbon atoms in R_1 to R_4 are less than or equal to 4.

4,494,980
HERBICIDAL ORTHO-(AZINYL)-BENZENESULFONAMIDES

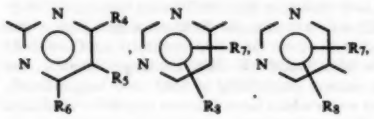
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1982, Ser. No. 437,325
Int. Cl.³ A01N 9/16; C07D 403/12
U.S. Cl. 71—92 10 Claims

1. A compound of the formula:



wherein Q is



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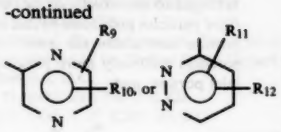


R_1 is H, F, Cl, CH_3 or OCH_3;
R_5, R_9, R_{10}, R_{11}, R_{12} and R_{17} are independently H or CH_3;
R_7, R_8, R_4 and R_6 are independently H, CH_3 or OCH_3;
X is CH_3, OCH_3 or Cl;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$ NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is CH
provided that when X is Cl, then Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$ and when R_1 is CH_3, it is in the 3-, 4- or 5-position of the benzene ring;
and their agriculturally suitable salts.

9. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

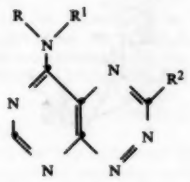
4,494,981

USE OF CERTAIN PYRIMIDO[5,4-e]-1,2,4-TRIANZINES FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

Tariq A. Andrea, Escalon; William W. John, and James J. Steffens, both of Modesto, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1983, Ser. No. 525,061
Int. Cl.³ A01N *43/64, 43/10*
U.S. Cl. 71—93 **1 Claim**

1. A method for controlling the growth of unwanted plants at a locus, which method comprises applying to the locus an effective amount of a compound of the formula



(I)

wherein R is hydrogen or alkyl of from one to four carbon atoms, R^1 is hydrogen or optionally substituted alkyl of from one to ten carbon atoms, either straight-chain or branched-chain in configuration, any substituent thereon being selected from: (a) halogen and hydroxy, bonded to a carbon atom other than the carbon atom of the alkyl moiety that is bonded to the indicated nitrogen atom; (b) alkoxy, alkylthio, alkenyl, alkynyl, cycloalkyl of from three to six carbon atoms; (c) optionally substituted phenyl, any substituent thereon being selected from halogen, mono- and polyhaloalkyl, cyano, nitro, amino, mono- and dialkylamino, alkyl, alkoxy and alkylthio wherein each alkyl moiety contains from one to four carbon atoms; and (c) aromatic heterocyclyl selected from furanyl and pyridyl, and R^2 is hydrogen or is alkyl, or mono- or polyhaloalkyl of from one to six carbon atoms.

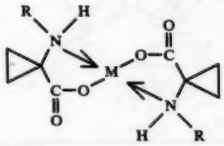
4,494,982

PLANT GROWTH-REGULATING 1-AMINO-CYCLOPROPANECARBOXYLIC ACID METAL COMPLEXES

Rolf Schröder, Wuppertal-Elberfeld, and Klaus Lürssen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 406,680, Aug. 9, 1982, Pat. No. 4,457,870.
This application Nov. 2, 1983, Ser. No. 548,178
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133917
Int. Cl.³ E05B *65/08*
U.S. Cl. 71—97 **11 Claims**

11. A method of regulating the growth of plants comprising applying to the plants, or to a habitat thereof, a plant-growth regulating effective amount of a 1-amino-cyclopropanecarboxylic acid metal complex of the formula



in which
R is a hydrogen atom or a radical of the formula —CO—R^1,
R^1 is a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms or a phenyl radical, and
M is a transition metal atom which can assume the coordination number 4.

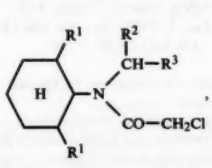
4,494,983

CHLOROACETIC ACID CYCLOHEXYLAMIDES, THEIR PREPARATION, THEIR USE FOR CONTROLLING WEEDS AND AGENTS FOR THIS USE

Karl Eicken, Wachenheim; Norbert Goetz, Worms, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,977
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123731
Int. Cl.³ A01N *37/26, 43/64;* **C07C** *103/38;* **C07D** *249/08*
U.S. Cl. 71—118 **8 Claims**

1. A chloroacetic acid cyclohexylamide of the formula



I

where R^1 is methyl, R^2 is hydrogen and R^3 is C_1–C_8-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-cycloalkylmethoxy, or C_1–C_6-alkoxyethoxy.

6. A herbicidal agent which comprises: a solid or liquid carrier and an effective amount of at least one compound of the formula I as set forth in claim 1.

4,494,984

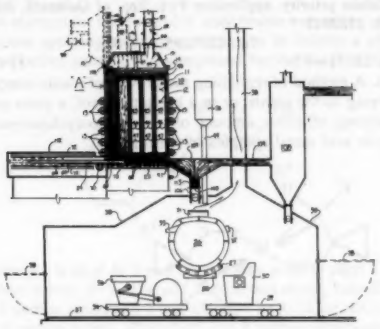
METHOD FOR DIRECT REDUCTION OF IRON OXIDE UTILIZING INDUCTION HEATING

Albert Calderon, 1065 Melrose St., Bowling Green, Ohio 43402

Continuation-in-part of Ser. No. 131,137, Mar. 17, 1980,. This application Jul. 7, 1980, Ser. No. 166,172

Int. Cl.³ C21B *13/12*

U.S. Cl. 75—11 **15 Claims**



1. A method of reducing iron oxide comprising the steps of:

(a) charging iron oxide and a solid carbonaceous material into the inlet end of a plurality of compartments whose walls comprise a material which is adaptable to being heated by induction and wherein said plurality of compartments commonly shares an induction coil means which surrounds said plurality of compartments and said induction coil means does not individually surround any of said compartments;

(b) heating said walls of said compartments by said induction coil means and transferring heat from said walls to the material contained therein by conduction to cause the metallization of the iron oxide by the reducing agents contained in the solid carbonaceous material;

(c) discharging metallized iron from an outlet end of said plurality of compartments;

(d) forcing the gaseous products generated by the reaction of the iron oxide and the reducing agents of the carbonaceous material, to flow toward the outlet end of said compartments to increase the efficiency of metallization; and

(e) collecting said gaseous products resulting from said metallization.

4,494,985

FILTRATION OF INCLUSIONS FROM MOLTEN METAL ALLOY

Russell H. Butler, Rockaway; Edward V. Limoncelli, Morristown; Michael J. Litwinowich, Boonton, and Michael L. Briggs, Budd Lake, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 7, 1983, Ser. No. 456,223

Int. Cl.³ C22B *21/06*

U.S. Cl. 75—93 R **13 Claims**

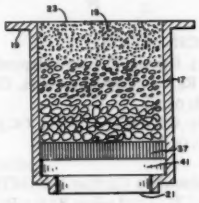
1. A filter apparatus for removing inclusions from a molten metal alloy, comprising:

(a) a nozzle body composed of a refractory material, and having an inlet portion and a slot outlet orifice portion for extruding a planar, sheet-like stream of molten metal;

(b) a filter bed located in said nozzle body, interposed between said inlet portion and said outlet portion and comprised of at least two filter zones arranged in layers;

(c) each of said filter zones containing filter particles which are composed of said refractory material and have a preselected size range;

(d) said filter zones being successively and progressively arranged to selectively locate the zone having the largest filter particles proximate to said nozzle body outlet orifice portion and locate the zone having the smallest filter particles relatively more proximate to said nozzle body inlet portion; and



(e) stabilizer means located successive to said filter bed, within said nozzle body and in proximity to said outlet slot orifice for providing a stable, substantially uniform flow from said filter bed to said outlet orifice and for providing a substantially planar flow through said slot.

4,494,986

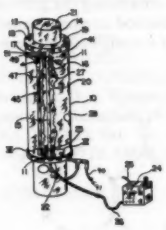
GOLD EXTRACTING PROCESS AND APPARATUS

Donald Forsman, 467 Emerson Ave., Yuba City, Calif. 95991

Filed Aug. 14, 1981, Ser. No. 292,953

Int. Cl.³ C22B *11/10*

U.S. Cl. 75—109 **4 Claims**



1. A process for recovering gold and other precious metals from water comprising the steps of:

flowing water downwardly within an enclosed chamber and out the top thereof;

simultaneously injecting air up said chamber and circulating the same back into said chamber; and

flowing mercury up within said chamber in non-contiguous relation to said water being flowed upwardly and using a portion of said injected air to lift said mercury and cause said mercury to exit at a point above said water and into impingement with a portion of said chamber above said water thereby forming electrostatically charged particles of mercury which move downwardly in said chamber into contact with the upwardly flowing water thereby forming amalgams of mercury and gold or other precious metals which can later be separated.

4,494,987

PRECIPITATION HARDENING AUSTENITIC SUPERALLOYS

Michael K. Korenko, Wexford, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,438
Int. Cl.³ G21C *1/00, 3/58;* C22C *30/00*
U.S. Cl. 75—124 22 Claims

1. An iron base, gamma prime precipitation hardening austenitic superalloy having improved ductility characteristics after neutron irradiation in a fast breeder nuclear reactor, comprising an iron-nickel-chromium alloy including about 0.05–0.5 weight percent of a ductility enhancing agent selected from the group consisting of yttrium, hafnium and scandium, alone or in combination with each other, titanium and aluminum in amounts effective to produce gamma prime hardening during thermal aging outside of said fast breeder nuclear reactor and silicon in an amount effective through interaction with said ductility enhancing agent to enhance the post neutron irradiation ductility of said alloy.

4,494,988

GALLING AND WEAR RESISTANT STEEL ALLOY

William J. Schumacher, Monroe, Ohio, and Harry Tanczyn, Baltimore, Md., assignors to Armco Inc., Middletown, Ohio

Filed Dec. 19, 1983, Ser. No. 562,984
Int. Cl.³ C22C *39/26*
U.S. Cl. 75—128 A 13 Claims

1. A steel alloy having high tensile strength, metal-to-metal wear resistance, and oxidation resistance, said alloy consisting essentially of, in weight percent, about 1.0% maximum carbon, from 10% to about 16% manganese, about 0.07% maximum phosphorus, about 0.1% maximum sulfur, 4% to about 6% silicon, 4% to about 6% chromium, 4% to about 6% nickel, about 0.05% maximum nitrogen, and balance essentially iron.

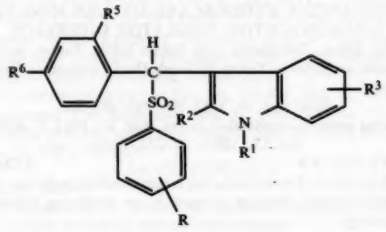
4,494,989

COMPOUNDS, PROCESSES AND MARKING SYSTEMS

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 164,892, Jun. 30, 1980, , which is a continuation-in-part of Ser. No. 48,599, Jun. 14, 1979, Pat. No. 4,257,954, which is a continuation-in-part of Ser. No. 931,654, Aug. 8, 1978, Pat. No. 4,253,788. This application Jul. 19, 1982, Ser. No. 399,916
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 2 Claims

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing as the color-forming substance a [(2-R^5-4-R^6-phenyl) (1-R^1-2-R^2-5/6-R^3-3-indolyl) (R-phenylsulfonyl)]methane of the formula



wherein:

R represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo, nitro or acetamido;

R^1 represents hydrogen, C_1 to C_{18} alkyl, C_2 to C_4 alkenyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

R^2 represents hydrogen, C_1 to C_3 alkyl or phenyl;

R^3 represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro;

R^5 represents hydrogen, dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl, C_1 to C_3 alkyl, C_1 to C_4 alkoxy or halo; and

R^6 represents hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo, dialkylamino in which alkyl is non-tertiary C_1 to C_4 or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 and benzyl may be substituted in the benzene ring by one or two or halo or C_1 to C_3 alkyl.

4,494,990

CEMENTITIOUS COMPOSITION

Harry A. Harris, Leawood, Kans., assignor to Ash Grove Cement Company, Overland Park, Kans.

Filed Jul. 5, 1983, Ser. No. 510,636
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 9 Claims

1. A cementitious composition comprising:

about 25–60 weight percent of a cement component selected from the group comprising Type I and Type II portland cement, said cement component comprising about 3–50 weight percent pozzolan having a sulfur reactivity factor of 12 or less;

about 40 to 75 weight percent calcium sulfate hemihydrate; and

about 1 to 20% by weight of a compatible polymer modifier, based on the weight of said cement component.

4,494,991

Patent Not Issued For This Number

4,494,992

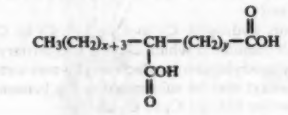
AMPHOTERICS AS EMULSIFIERS FOR BITUMINOUS EMULSIONS

Peter Schilling, and Hans G. Schreuders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

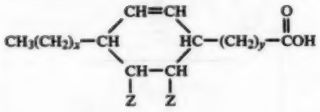
Division of Ser. No. 505,714, Jun. 20, 1983, Pat. No. 4,478,642. This application Jan. 18, 1984, Ser. No. 571,781
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—277 3 Claims

1. Amphoteric emulsifiers for anionic and cationic bitumi-

nous emulsions consisting of reaction products of nitrogen-containing intermediates with compounds selected from the group consisting of formaldehyde and sodium sulfite or bisulfite, chloroalkane sulfonic acid salts, γ-propane sultone, chloromethane phosphonic acid, acrylic acid, fumaric acid, maleic acid and chloroalkanoic acids, wherein the nitrogen-containing intermediates are selected from the group of reaction products of polyamines reacted with sulfonated carboxylic acids and polyamines reacted with polycarboxylic acids corresponding to the formulae



and



wherein x and y are integers from 3 to 9, x and y together equal 12, at least one Z is a carboxylic acid group and any remaining Z is hydrogen.

4,494,993

NACREOUS PIGMENTS, THEIR PREPARATION AND USE

Horst Bernhard, Schwarzenberg, Austria, and Reiner Easelborn, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,045

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151354

Int. Cl.³ C09C *3/00*

U.S. Cl. 106—291 **15 Claims**

1. Nacreous pigments having improved transparency and tinctorial strength, comprising mica flakes whose surfaces are coated with a metal oxide layer wherein said metal oxide layer consists essentially of a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide.

9. A process for preparing nacreous pigments having improved transparency and tinctorial strength and comprising mica flakes whose surfaces are coated with a metal oxide layer wherein the metal oxide layer comprises a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide;

comprising coating mica flakes in an aqueous suspension of a pH of about 0.5–5 and a temperature of about 50°–100° C. by including in the suspension an amount of aluminum ions corresponding to the amount to be incorporated into the metal oxide layer and adding to the suspension two solutions at the same time, one a solution of a titanium salt providing an amount of titanium ions corresponding to the amount to be incorporated into the metal oxide layer and the other a basic solution effective to maintain said pH at an essentially constant value and containing an amount of solubilized SiO_2 corresponding to the amount to be incorporated into the metal oxide layer, uniformly coprecipitating onto the mica flakes titanium dioxide hydrate, silicon dioxide and aluminum hydroxide to form a uniform layer homogeneously containing said precipitated components,

and then washing, drying and calcining the coated mica flakes.

14. In a composition comprising a base ingredient and a pearlescent pigment based on TiO_2 coated mica flakes, the improvement wherein the mica flakes are nacreous pigments having improved transparency and tinctorial strength, comprising mica flakes whose surfaces are coated with a metal oxide layer wherein said metal oxide layer consists essentially of a homogeneous mixture of titanium dioxide, silicon dioxide and aluminum oxide.

4,494,994

SURFACE ACTIVE AGENT COMPOSITIONS CONTAINING POLYPEPTIDES AND LIGNIN SULFONIC ACID

Gheorghe Cioca, Coatesville, Pa.; Marcel Siegler, North Bergen, N.J., and Apostol Spiliadis, Frazer, Pa., assignors to Seton Company, Newark, N.J.

Filed Mar. 28, 1983, Ser. No. 479,715

Int. Cl.³ C08H *1/00, 1/06, 5/02, 5/04*

U.S. Cl. 106—308 P **14 Claims**

1. In a composition including solid particles having a particle size of about 2 microns or less and a surface active agent, the improvement comprising said surface active agent being comprised of:

(a) lignin sulfonic acids; and

(b) a polypeptide having a molecular weight of about 2,500 to about 15,000.

4,494,995

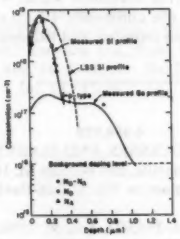
DUAL SPECIES ION IMPLANTATION OF TERNARY COMPOUNDS BASED ON IN-GA-AS

Kamal Tabatabaie-Alavi, Cambridge; Abu N. M. M. Choudhury, Belmont; Nancy J. Slater Gabriel, Cambridge, and Clifton G. Fonstad, Arlington, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1983, Ser. No. 471,083

Int. Cl.³ H01L *21/265, 29/48, 29/56*

U.S. Cl. 148—1.5 **5 Claims**



1. A method for ion implanting using multiple energy Be^+ to produce p-type regions in an n-$In_{0.53}Ga_{0.47}As$ substrate and thereafter implanting Si in Be-implanted InGaAs epilayers to produce n^+-p-n structure which includes the steps of:

implanting Be^+ in said n-InGaAs substrate;

annealing Be^+ implanted n-InGaAs substrate; and

implanting Si in Be^+ implanted n-InGaAs substrate.

4,494,996

IMPLANTING YTTRIUM AND OXYGEN IONS AT SEMICONDUCTOR/INSULATOR INTERFACE

Junichi Ohno, Yokohama, and Takao Ohta, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 11, 1983, Ser. No. 483,706

Claims priority, application Japan, Apr. 12, 1982, 57-60536

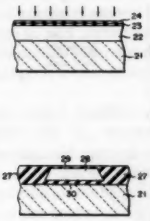
Int. Cl.³ H01L *21/265, 7/00*

U.S. Cl. 148—1.5 **4 Claims**

1. A method of manufacturing a semiconductor device with a semiconductor element formed in an insulating substrate comprising:

a step of forming a semiconductor film on an insulating substrate;

a step of ion implanting yttrium and oxygen or a lanthanide metal and oxygen in the neighborhood of said substrate and semiconductor film; and



thermally treating the resultant system, thereby forming an insulating layer containing yttrium or a lanthanide metal as said insulating layer in the neighborhood of said interface.

4,494,997

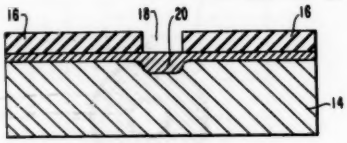
ION IMPLANT MASK AND CAP FOR GALLIUM ARSENIDE STRUCTURES

Zachary J. Lemnios, Bowie, and He B. Kim, Pasadena, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1983, Ser. No. 504,568

Int. Cl.³ H01L *21/265*

U.S. Cl. 148—1.5 **5 Claims**



1. A method for fabricating doped regions in a gallium arsenide substrate comprising the steps of depositing a layer of germanium selenide over a substrate of gallium arsenide, exposing the layer of germanium selenide to a predetermined pattern, developing the exposed layer of germanium selenide to provide openings in the layer of germanium selenide, ion implanting impurities through said openings to form first ion implanted regions, ion implanting impurities of a second concentration through the layer of germanium selenide to form second ion implanted regions, annealing first and second ion implanted regions, converting the layer of germanium selenide to a layer of germanium, and removing the layer of germanium.

4,494,998

PROCESS FOR PRODUCING AUSTENITIC STAINLESS STEELS LESS SUSCEPTIBLE TO ROLLING DEFECTS

Masanori Ueda; Ryousuke Takahashi, both of Fukuoka, and Hidemaro Takeuchi, Yamaguchi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 341,629, Jan. 22, 1982, abandoned. This application Aug. 26, 1982, Ser. No. 411,953

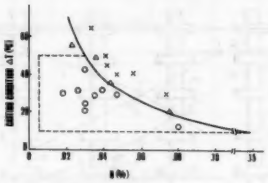
Claims priority, application Japan, Jan. 31, 1981, 56-13696; Jan. 31, 1981, 56-13697

Int. Cl.³ C22C *38/12*

U.S. Cl. 148—2 **6 Claims**

1. A process for producing austenitic stainless steels less susceptible to rolling defects, comprising:

continuously casting an austenitic stainless steel containing not less than 0.005% nitrogen under the condition of $N \times \Delta T \leqq 1.5$, in which N represents the nitrogen content percentage, and ΔT represents the difference between a



tundish temperature of the steel and the melting point of the steel and ranges from 10° C. to 50° C., and hot rolling the steel slab thus obtained.

4,494,999

PROCESS FOR MAKING FINE-GRAIN WELDABLE STEEL SHEET FOR LARGE-DIAMETER PIPES

Michael Grïf, Ratingen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,450

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3226160

Int. Cl.³ C21D *7/14*

U.S. Cl. 148—2 **19 Claims**

1. A process for producing fine-grain microalloyed steel sheets suitable for welding into large-diameter pipes, comprising the steps of:

(a) providing a composition consisting essentially, by weight, of 0.05 to 0.07% carbon, 1.5 to 2.0% manganese, 0.001 to 0.003% sulfur, 0.005 to 0.008% nitrogen, titanium in a proportion of substantially 3.5 to 4 times that of nitrogen, 0.25 to 0.40% silicon, 0.03 to 0.05% aluminum, 0.02 to 0.08% niobium, remainder iron and usual impurities;

(b) continuously casting said composition into slabs;

(c) heating said slabs to an elevated temperature between substantially 1120° and 1160° C., with resulting formation of TiN precipitates having particle sizes between about 0.06 and 0.2 microns; and

(d) subjecting the slabs to a succession of hot-rolling stages with intervening cooling, including an initial deformation to a degree of at least 55% beginning at said elevated temperature.

4,495,000

DEVICE FOR CUTTING A STRIP CAST IN A CONTINUOUS CASTING MACHINE

Karl-Heinz Möller, Obertshausen, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,048

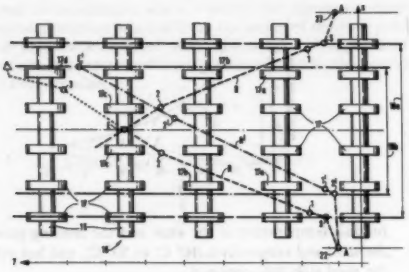
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935029

Int. Cl.³ B23K *7/02, 7/10*

U.S. Cl. 148—9 R **9 Claims**

1. In a device for cutting through a continuously cast strip produced in a continuous casting installation, consisting of a flame cutting machine with at least one flame cutting unit, a roller bed for transportation of the strip which moves at a constant speed, whereby the flame cutting machine can be coupled to the strip during the flame cutting action, and with a control unit for controlling the lateral movement of each flame cutting unit in a path of travel which is always between the individual rollers of the roller bed during the cutting operation, the improvement being that the speed of the cutting path is within a range which includes the optimum speed, and said

control unit comprising impulse senders connected with a control computer and installed at said flame cutting machine to



monitor the longitudinal motion of said machine and the transverse motion of said flame cutting unit.

4,495,001

PRODUCTION OF AGE HARDENABLE ALUMINUM EXTRUDED SECTIONS

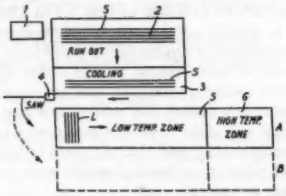
Walter Bennett; John H. Ablewhite, and Anthony J. Bryant, all of Banbury, England, assignors to Alcan International Limited, Montreal, Canada

Filed Dec. 3, 1982, Ser. No. 446,697

Claims priority, application United Kingdom, Dec. 11, 1981, 8137503

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **6 Claims**



1. In a method of producing extruded sections of an age hardenable alloy, in which extruded sections are extruded onto a run out table and laterally moved therefrom to a cooling and stretching station

the improvement which comprises progressing the cooled and stretched sections into, through and out of a relatively low temperature first thermal ageing zone while travelling in a direction transverse to their length and into, through and out of a second, higher ageing temperature zone also while travelling in a direction transverse to their length.

4,495,002

THREE-STEP TREATMENT OF STAINLESS STEELS HAVING METASTABLE AUSTENITIC AND MARTENSITIC PHASES TO INCREASE RESISTANCE TO CHLORIDE CORROSION

Joseph G. Anello, Ridley Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 267,826, May 27, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,485

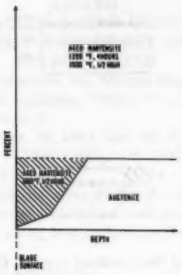
Int. Cl.³ C21D *7/06*

U.S. Cl. 148—12 E **12 Claims**

1. A process for producing improved chloride corrosion resistance in turbine components fabricated from stainless steel which contains both aged martensitic and metastable austenitic phases, said process comprising:

(a) initial shot peening said fabricated component at an intensity of 0.010–0.015 A with 190–270 size shot;

(b) heating said component to about 980°–1020° F. for ¼–4 hours; and



(c) final shot peening said component at an intensity of 0.004–0.006 A with 70–150 size shot.

4,495,003

MANUFACTURING A STEEL TUBE INCLUDING TUFFTRIDING

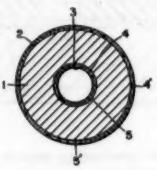
Naomi Kubo, Nagoya, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto, Japan

Division of Ser. No. 383,788, Jun. 1, 1982, Pat. No. 4,458,724. This application Jan. 10, 1983, Ser. No. 456,982

Claims priority, application Japan, Jun. 8, 1981, 56-87868

Int. Cl.³ B32B *15/00*

U.S. Cl. 148—15.5 **4 Claims**



1. A method of manufacturing a steel tube having a small outside diameter and a large wall thickness, and a hardened layer on at least one surface, comprising the steps of Tufftriding a steel tube in a molten bath of sodium cyanide while the tube is being axially vibrated, whereby a diffusion layer comprising a solid solution of nitrogen is formed on at least one surface of the tube; and heat treating the tube in a gaseous atmosphere to decompose any intermetallic compound formed on the diffusion layer by the Tufftriding, whereby a hardened layer is formed on the said surface.

4,495,004

PROCESS FOR HIGH-TEMPERATURE CARBURIZING TREATMENT OF TRACK BUSHES FOR TRACTORS OR TRACKED VEHICLES

Walter Grilli; Franco De Meo, and Ivan Franchini, all of Modena, Italy, assignors to Italtractor ITM SpA, Castelvetro, Italy

Filed Oct. 20, 1983, Ser. No. 543,727

Int. Cl.³ C23C *11/10*

U.S. Cl. 148—16.5 **8 Claims**

1. Process for the production of track bushes for tracked vehicles, from low-carbon boron steel, having a martensitic structure in the center and on the surface, with 5–8 ASTM austenitic grain, center hardness between 32 and 44 HRC,

surface hardness over 55 HRC and hardness of ends between 35 and 46 HRC, comprising forming a charge comprised by a plurality of bushes in a basket, and subjecting the charge to the following sequential operations:

preheating the charge in a pretreatment chamber of a furnace having a carburizing chamber, with combustion gases from said carburizing chamber;

transferring the charge to said carburizing chamber, where the carburizing atmosphere is produced in situ, and there carburizing the charge at a temperature in excess of 900° C.;

cooling the charge in a third chamber of said furnace, to a temperature of 820°–850° C., maintained by means of combustion gas leaving said carburizing chamber;

extracting bushes from the charge one at a time by a robot and directly individually quenching the extracted bushes;

tempering the ends of the bushes and emulsion cooling the bushes; and

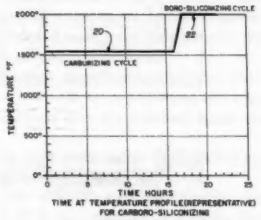
total stress relieving the bushes for 1–2 hours at 180°–200° C. in a continuous furnace fed by hot waste gases from the first-mentioned furnace.

4,495,005

CARBOSILICONIZING FERROUS SUBSTRATES

William L. Aves, Jr., Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 31, 1983, Ser. No. 547,184
Int. Cl.³ C21D *9/22*
U.S. Cl. 148—16.5 **16 Claims**



TIME AT TEMPERATURE PROFILE (REPRESENTATIVE) FOR CARBORO-SILICONIZING

1. A process for treating ferrous metals comprising the steps of:

exposing the ferrous metal to diffusible carbon, boron and silicon during a single thermal cycle; and

controlling the conditions at the ferrous metal surface to initially carburize the ferrous metal surface and subsequently boronize and siliconize the ferrous metal surface, forming a gradual transition between the carburized layer and the boronized and siliconized layer.

4,495,006

BOROCARBURIZING FERROUS SUBSTRATES

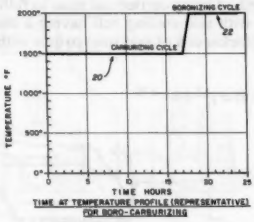
William L. Aves, Jr., and Gary A. Aves, both of Arlington, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 31, 1983, Ser. No. 547,302
Int. Cl.³ C21D *9/22*; C23C *9/00*
U.S. Cl. 148—16.5 **19 Claims**

1. A process for treating ferrous metals comprising the steps of:

exposing the ferrous metal to diffusible carbon and boron during a single thermal cycle; and

controlling the conditions at the ferrous metal surface to initially carburize the ferrous metal surface and subsequently boronize the ferrous metal surface, forming a



TIME AT TEMPERATURE PROFILE (REPRESENTATIVE) FOR BORO-CARBURIZING

gradual transition between the carburized and boronized layers.

4,495,007

SOLDERING FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,634
Int. Cl.³ B23K *35/36, 35/34*
U.S. Cl. 148—23 **25 Claims**

1. A solder flux which comprises:

(a) rosin;

(b) an activator having at least one halogen atom and at least one destabilizing substituent;

(c) a surfactant selected from the group consisting of (a') a polycarboxylic acid, (b') a hydroxyl substituent of (a'), (c') a keto acid and (d') a mixture of any of the foregoing surfactants; and

(d) the dimer of linoleic acid, wherein said activator is present in an amount of from 1 to 15 weight percent and said surfactant is present in an amount of from 0 to 25 weight percent.

4,495,008

PROCESS OF MAKING LONG-LIFE THIN METAL PLATE FOR AUTOMOBILE BODIES, AND THIN PLATE MADE THEREBY

Roberto Bruno, and Massimo Memmi, both of Rome, Italy, assignors to Zincroksid S.p.A., Turin, Italy

Division of Ser. No. 219,112, Dec. 22, 1980, Pat. No. 4,437,944, which is a continuation-in-part of Ser. No. 173,234, Jul. 28, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,444
Int. Cl.³ C23F *7/26*
U.S. Cl. 148—31.5 **5 Claims**

1. A long-life sheet metal plate for automobile bodies, the sheet metal plate being coated on only one of its faces with a layer of zinc, and a chrome-chromic oxide coating covering both the zinc-coated face and the other face of the metal plate.

4,495,009

METHOD OF COOLING COLD STEEL STRIP WITH COOLING ROLLS

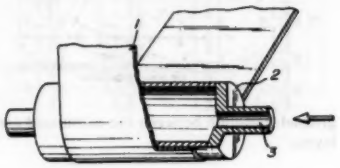
Shinjiro Murakami; Osamu Hashimoto, both of Kurashiki; Kazuo Morimoto, and Kaneaki Hyodo, both of Hiroshima, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Mitsubishi Heavy Industries, Ltd., Tokyo, both of, Japan

Filed Jul. 6, 1983, Ser. No. 511,561
Claims priority, application Japan, Jul. 8, 1982, 57-117758
Int. Cl.³ C21D *1/18*
U.S. Cl. 148—128 **1 Claim**

1. A method of cooling a steel strip with a hollow cooling roll by means of thermal transmission through the roll between a cooling medium flowing through an internal cavity of said cooling roll and said steel strip being in contact with and running about said cooling roll, wherein said method com-

prises the steps of obtaining uniform contact between the strip and cooling rolls, controlling the temperature fall of the strip per each cooling roll, and controlling tensile forces on the strip, said method being carried out so as to fulfil the following equation (1) with said cooling roll having a diameter $D>600$ mm when a thickness h of said steel strip is within $0.2 \leqq h < 0.6$ mm,

$$\Delta T_S < 0.65 \cdot \sigma_T^{1.5} \cdot \theta \cdot h^{-0.75} \quad (2)$$



and so as to fulfil the following equation (2) with said cooling roll having a diameter $D>1{,}000$ mm when a thickness h of said steel strip is within 0.6 mm $\leqq h$,

$$\Delta T_S < 1.05 \cdot \sigma_T^{1.5} \cdot \theta \cdot h^{-0.83} \quad (2)$$

where ΔT_S is temperature fall °C. per one cooling roll, σ_T is tensile stress in a lengthwise direction of said steel strip and θ is winding angle about said cooling roll.

4,495,010

METHOD FOR MANUFACTURING FAST BIPOLAR TRANSISTORS

Ditmar Kranzer, Putzbrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 208,493, Nov. 19, 1980, abandoned. This application Jan. 24, 1983, Ser. No. 460,504

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946963

Int. Cl.³ H01L *21/20, 21/265*

U.S. Cl. 148—175 **5 Claims**

1. Method for the manufacture of fast bipolar transistors, which comprises

applying an n-doped buried-layer diffusion layer over a p-doped silicon semiconductor substrate;

subsequently applying an n-doped epitaxially deposited silicon layer over the semiconductor body;

forming walls extending through the epitaxial layer into one of the buried-layer diffusion layer and the semiconductor substrate for insulating adjacent components;

creating a collector zone by placing n-doped collector diffusions into the epitaxially applied n-doped silicon layer which extend through the epitaxially applied layer into the buried-layer diffusion layer;

depositing, in sequence, an undoped polycrystalline layer, a silicon oxide layer and a silicon nitride layer on the surface of the semiconductor body at given locations where a transistor is to be produced;

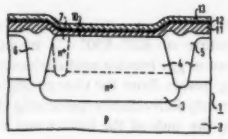
selecting base contact locations of a given size; collector contact locations and emitter contact locations;

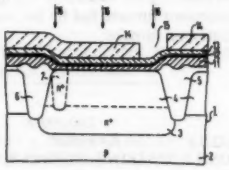
depositing a photo varnish or photoresist layer on the silicon nitride layer; etching windows which are larger than the given size into the photo-layer at the base contact locations by photolithography;

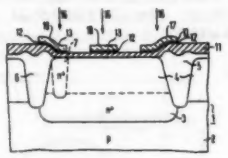
implanting boron with a particle energy which penetrates the silicon nitride and SiO_2 layers down into the polycrystalline layer but does not penetrate the resist mask;

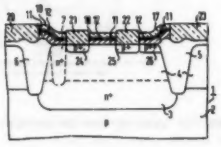
implanting boron again after removing the photo resist mask with a particle energy which implants the exposed parts of the polycrystalline layer with boron but does not implant the silicon body and the parts of the polycrystalline layer under the silicon nitride layer;

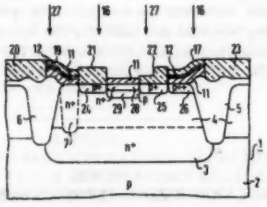
simultaneously with oxidizing the exposed parts except the base contact locations of the polycrystalline layer for structuring, diffusing boron from the polycrystalline layer into the layers therebelow by the heat caused by the oxidation; subsequently etching away the silicon nitride and silicon oxide layers at the emitter contact locations by another photo technique while preserving the nitride and oxide layers of the base and collector contact locations;











implanting boron and arsenic into the polycrystalline layers at the emitter contact locations with a substantially higher concentration of arsenic than boron, leaving a nitride mask in the base contact locations which is thick enough to keep arsenic ions away from the polycrystalline layer therebelow;

producing an inner base region and an emitter zone by bringing arsenic ions and boron ions from the polycrystalline layer into the silicon body by thermal diffusion; and

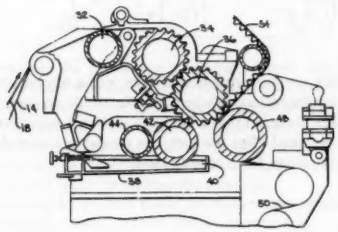
opening contact points on the doped polycrystalline layers, and subsequently applying emitter, base and collector contacts.

4,495,011

METHOD OF MANUFACTURING DUAL ARCH CORRUGATED PAPERBOARD PRODUCT

Paul M. Scharfenberg, Hurst, and Kenneth N. Findley, Jr., Arlington, both of Tex., assignors to Findley Adhesives, Inc., Brookfield, Wis.

Filed Apr. 5, 1982, Ser. No. 365,795
Int. Cl.³ B32B *31/26, 3/28*
U.S. Cl. 156—78 **13 Claims**



1. A process for forming a corrugated paperboard product having a dual arch corrugated medium fastened to at least one liner, comprising the steps of:

providing first and second webs of medium material;

applying a dryable water-based emulsion adhesive bonding agent in a foamed state over substantially the entire surface of at least one of said webs;

drying the bonding agent instantaneously after its application on said one web by evaporating the water from said bonding agent so that the bonding agent assumes a dry condition;

bringing the webs together after the bonding agent is dry to form a dual arch medium;

corrugating the medium so formed while simultaneously applying heat to said medium to activate the dried bonding agent to seal the webs together;

applying adhesive to the flutes of the corrugated medium; and

adhering the liner to the medium.

4,495,012

METHOD OF AND APPARATUS FOR PRODUCING DECORATIVE FLOOR AND WALL COVERINGS

Daniel Bérenger, Saint Paul Trois Chateaux, France, assignor to Gerland S.A., Villeurbanne, France

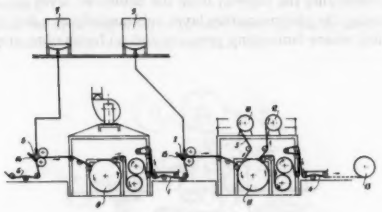
Filed Jun. 17, 1983, Ser. No. 505,310
Claims priority, application France, Jun. 18, 1982, 82 11122
Int. Cl.³ B32B *37/02;* B44C *1/16;* C09J *5/02;* B44C *3/00*
U.S. Cl. 156—78 **8 Claims**

1. A process for continuously producing a floor or wall covering which comprises the steps of:

continuously applying a thermally activatable plastisole to a sheet support to form a plastisole-coated sheet;

continuously compacting the plastisol coated sheet with a transferrable pattern on a transfer paper continuously; and

continuously and progressively thermally activating said plastisol to gelify the same while said pattern of said paper is in contact therewith, thereby transferring said pattern from said paper to the plastisol as it is gelified and forming



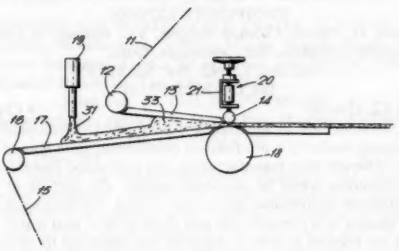
a patterned gelified synthetic resin surface of a wall covering formed from said sheet.

4,495,013

APPARATUS AND METHOD FOR THE CONTINUOUS MANUFACTURE OF FOAM BOARD

Brian J. Walker, Cheshire, and Victor F. Hodgson, Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 21, 1980, Ser. No. 141,929
Claims priority, application United Kingdom, May 31, 1979, 7918923
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—79 **7 Claims**



1. Apparatus for the continuous manufacture of foam board having a plastics foam core sandwiched between flexible facing sheets which comprises a conveyor assembly for continuously advancing upper and lower facing sheets in spaced opposed transversely-parallel disposition; a foam dispenser for depositing a liquid mixture of plastics foam-forming ingredients onto at least one of the facing sheets; a metering device for causing the facing sheets to converge into proximate relationship; and zones for the expansion and curing of the foam laminate; the metering device comprising two spaced opposed foam-constricting members forming therebetween a metering gap, at least one of the members being deformable in a controlled manner such that the profile of the metering gap can be variously defined.

4,495,014

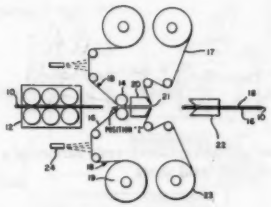
LAMINATING AND TRIMMING PROCESS

Peter L. Gebrian, and Charles B. Jones, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1983, Ser. No. 467,649
Int. Cl.³ B32B *31/20, 31/12;* B29C *27/00*
U.S. Cl. 156—80 **32 Claims**

1. A process for laminating discrete sections of a supported photosensitive layer to at least one sheet substrate comprising

(a) laminating under pressure a section of the supported photosensitive layer to a moving sheet substrate,
(b) releasing the laminating pressure from the photosensitive layer and the sheet substrate,
(c) removing the support from the laminated layer and trimming the photosensitive layer substantially at a line dividing where laminating pressure and no laminating pressure



has been applied to said photosensitive layer, wherein a time interval of not less than 0.5 seconds is present between the release of pressure in step (b) and the support removal of step (c),
(d) reversing the direction of travel of the photosensitive layer which is not laminated to the sheet substrate,
(e) repeating steps (a), (b), and (c) to laminate another section of photosensitive layer.

4,495,015

CONTROLLED WAFER RELAXING IN MAKING COMPOSITE LENSES

Donald H. Petcen, Colonial Heights, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Sep. 1, 1983, Ser. No. 528,675
Int. Cl.³ B32B *17/10*
U.S. Cl. 156—80 **8 Claims**

1. In a method of laminating a preformed thermoplastic/-thermoset wafer to a pre-finished ophthalmic glass lens of the type, wherein after manufacturing, the preformed thermoplastic/thermoset wafer is positioned against the surface of the pre-finished ophthalmic glass lens so that the thermoplastic side thereof is in contact with said glass surface, said wafer and glass are pressed to form a laminate and subjected to elevated temperatures and high pressures to strengthen bonding therebetween, wherein the improvement comprises:
storing said preformed thermoplastic/thermoset wafer immediately after manufacture thereof at a temperature of about 40° to 50° F. at less thant 50% relative humidity; and subjecting said stored wafer to a temperature of about 90° to 120° F. and a relative humidity of about 50% to 70% for 15 to 48 hours just prior to said lamination.

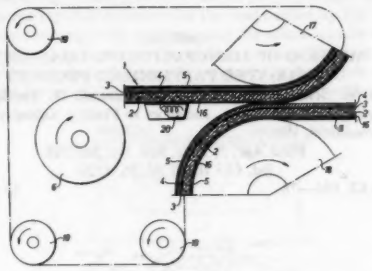
4,495,016

METHOD OF MAKING A PACKING LAMINATE WEB

Rolf Viberg, Bjärred; Göran Harrysson, Lund, and Tom Kjelgaard, Löddeköpinge, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Dec. 23, 1982, Ser. No. 452,831
Claims priority, application Sweden, Dec. 29, 1981, 8107824
Int. Cl.³ B32B *31/04, 31/20, 31/30*
U.S. Cl. 156—152 **7 Claims**

1. A method for converting a packing laminate web to a secondary web with a sterile surface, comprising the steps of:
extruding a detachable protective layer on to a first side of said packing laminate web to form the primary web, said protective layer maintaining said first side in a sterile condition;
delaminating said protective layer from said first side while maintaining said first side in the sterile condition; and
transferring said protective layer to a second side of said packing laminate, said protective layer being secured to said second side to form said secondary web;
wherein, before the protective layer is delaminated, the laminate web is guided around a first of a pair of cooperating pressure rollers and then into a nip between said pressure rollers, where a transfer of the protective layer takes place, so that a laminate web in a secondary form is obtained after the web has passed between the pressure rollers for a second time.

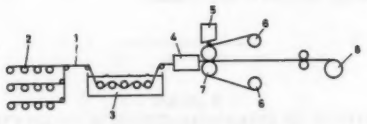


4,495,017

PROCESS FOR CONTINUOUS PRODUCTION OF PREPREG SHEETS

Yasuaki Abe, Takarazuka; Mikio Hayashi, Kawanishi; Kousaku Asagi, Ibaraki; Akira Morii, Takatsuki, and Kazutoshi Fujimura, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 302,356, Sep. 15, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 478,880
Claims priority, application Japan, Sep. 18, 1980, 55-130191; Jun. 26, 1981, 56-100344
Int. Cl.³ B32B *5/02*; D04H *3/08*
U.S. Cl. 156—181 **10 Claims**



1. A process for the continuous production of prepreg sheets unidirectionally arranged in parallel which consists essentially of contacting a plurality of fiber bundles arranged unidirectionally in parallel with each other with a solvent which may contain up to 5% by weight of a sizing agent and continuously taking up said fiber bundles under tension of 33.33–250 g/1000 filaments over curved surfaces of spreader bodies, while in a wet state with said solvent to spread out said fiber bundles, drying the thus-spread out fibers by contacting them over heated drum drier bodies heated sufficiently to substantially remove all the solvent therefrom, and then impregnating the dried fiber bundles with a predetermined quantity of a molten resin.

4,495,018

PROCESS FOR PRODUCING A REINFORCED TUBE

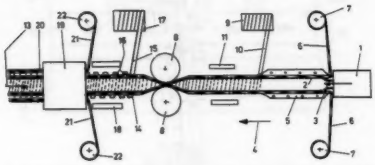
Christoph Vohrer, Hattsteiner Str. 22, D, 6420 Konigstein 2, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 514,154

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227166

Int. Cl.³ B31C *3/00*

U.S. Cl. 156—187 12 Claims



1. A process for producing a reinforced tube which has a thin-walled inner tube and an outer sheath made of thermoplastic or elastomeric material as well as thin strips which extend in an axial direction on the outside of the inner tube and are reinforced with textile threads and which consist of plastic connectable to the material of the inner tube, the strips appearing as a closed layer, including the steps of:

a. extruding the thermoplastic or elastomeric material from an annular nozzle to form the inner tube **2**,

b. encircling the extruded inner tube with a closed layer of the strips (**6**), which are at least coated with heat-activatable adhesive material and which extend in the axial direction of the inner tube,

c. subjecting the inner tube (**2**) to a relatively low internal pressure (**3**) while passing the inner tube and the closed layer of thin strips through a sizing guide **5**, while supplying heat at the entrance of the guide, thereby expanding the tube against the strips and the strips against the guide, the heat at the guide entrance being effective to activate the adhesive and bond the tube to the layer of strips, the guide being long enough to cool the tube and strips sufficiently so that they set as an integral structure,

d. winding a second layer of strips (**10**) of heat activatable adhesive material spirally over the first layer bonded to the inner tube and bonding the second layer to the first layer by heating,

e. passing the tube with the connected layers of strips through pinching rolls to close the tube and thereby maintain the tube upstream from the rolls at said relatively low internal pressure, said rolls being also effective to drive the tube and the layers of strips bonded thereto, and

f. finally subjecting the reinforced inner tube (**14**) to a relatively high internal pressure (**13**) and applying to it the outer sheath (**20**).

4,495,019

PLYWOOD BENDING

Richard Ogg, R.R. 3, Box 38, Littlestown, Pa. 17340

Filed May 21, 1982, Ser. No. 380,756

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—222 16 Claims

8. Apparatus for making a strip of laminated material comprising:

a first roller rotatable about a first axis;

a second roller rotatable about a second axis, said second axis being distinctly non-parallel with said first axis;

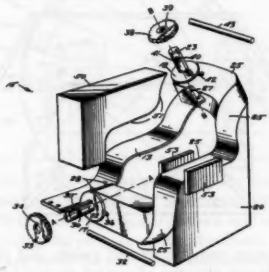
a female die surface extending continuously from said first roller to said second roller;

a male die surface conforming to a central area of said female die surface between said first and second rollers, and having a length substantially less than the length of said female die surface;

a flexible band of substantially non-deformable material, said band having a length greater than the length of said female die surface extending between said rollers;

means for attaching the ends of said flexible band to said rollers;

means for applying a force to said male die surface moving it toward said female die surface; and



means for rotating said rollers about their axes of rotation with the band held thereby to tension said band and cause said band to closely conform to the shape of said female die surface.

9. Apparatus as recited in claim **8** wherein said first and second axes are stationary with respect to each other.

4,495,020

PRIMER FOR BONDING POLYESTER PLASTICS

Masamitsu Nakabayashi, Sennan; Masuo Miyaji, Izumi, and Yoshio Kamatani, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 15, 1983, Ser. No. 466,555

Claims priority, application Japan, Feb. 18, 1982, 57-25482

Int. Cl.³ C09J *5/04*

U.S. Cl. 156—314 8 Claims

1. A method for bonding polyester plastics to the same or different substrates which comprises undercoating the surface of the polyester plastics with a primer composition which contains an isocyanate compound having one or more 1,3,5-oxadiazine-2,4,6 -trione rings and, then, bonding the polyester plastics to the same or different substrates with use of an adhesive.

4,495,021

APPARATUS FOR PRODUCING FIBER REINFORCED PLASTIC SHEET STRUCTURES

William B. Goldsworthy, Ranchos Palos Verdes, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 290,358, Dec. 11, 1981, Pat. No. 4,420,359. This application Sep. 26, 1983, Ser. No. 535,909

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—425 13 Claims

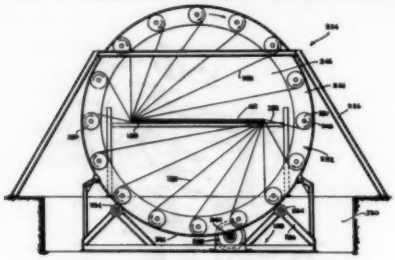
1. An apparatus for producing a reinforced plastic composite article on a continuous basis, comprising:

(a) means for continuously feeding through said apparatus a plurality of endwise abutted panels with each having a pair of spaced apart first edges and a pair of spaced apart second edges and relatively flat opposite surfaces;

(b) winding means for winding a plurality of first strands of fiber reinforcing material about said panels in a direction which is at an angle to the direction of movement of said panels and which strands are in closely spaced relationship to one another about and around said pair of spaced apart first edges and across said relatively flat opposite surfaces, and where portions of said first strands extend across and between flat surfaces of two endwise abutted panels; and

(c) means for applying a plurality of second strands of fiber reinforcing material to the first strands on said relatively

flat opposite surfaces of said panels and extending between the spaced apart second edges with a predetermined amount of tension on said strands and while said panels are continuously feeding through said apparatus, and where portions of said second strands extend across flat surfaces



of two or more endwise abutted panels, said plurality of first strands and plurality of second strands having been impregnated with a curable binder which was cured and bonded to first and second strands and thereby bonding said first and second strands to one another to effect a woven strand sheet and to bond same to said panels.

4,495,022

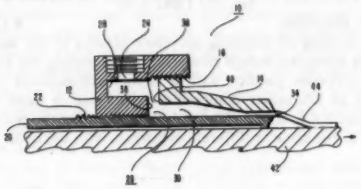
EXTRUSION METHOD AND APPARATUS

Montri Viriyayuthakorn, Hamilton Township, Mercer County, N.J., and Robert V. DeBoo, Atlanta, Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,301

Int. Cl.³ B29C *19/00;* **H01B** *7/02;* **A21C** *3/00;* **A01J** *21/00*

U.S. Cl. 156—500 **24 Claims**



1. A diverter for uniformly distributing extrudate from an extruder so as to coat with extrudate an elongated member passing axially through the center of the diverter comprises a housing having a first cylindrical member with an extrudate entry port therein, a second cylindrical member coupled to the first member and an axial core member adjustably positioned within the first member and extending centrally through the first and second members, the members situated so as to form a circumferentially and axially extending cavity within the housing, said cavity having three communicating sections, a ring section which communicates with the extrudate entry port, a die section extending circumferentially and axially along the outer surface of the axial core member and terminating in an annular extrudate outlet orifice, and a contraction section intermediate and communicating with said ring and die sections, said contraction section being formed by a gap between essentially flat opposing internal faces of the first and second members said gap varying in size between the vicinity of the entry port and 180° therefrom by means of a bevel on at least one of said opposing faces, said bevel forming an angle of from ¼° to 5° with respect to the opposing face.

4,495,023

APPARATUS FOR FITTING SPACER FRAMES

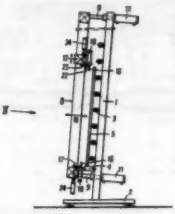
Peter Lisec, Bahnhofstrasse 34, Amstetten-Hausmening, Austria

Filed Nov. 30, 1982, Ser. No. 445,831

Claims priority, application Austria, Dec. 3, 1981, 5194/81; Apr. 5, 1982, 1355/82

Int. Cl.³ B32B *31/00;* **B23P** *19/00*

U.S. Cl. 156—562 **14 Claims**



1. Apparatus for fitting spacer frames onto panes of glass with adhesive or sealant therebetween, in the course of manufacture of insulting glass panes, comprising a substantially upright support wall, conveyor means for conveying panes of glass into the apparatus, a frame-like mounting support disposed in front of the support-wall, means for moving the mounting support toward and away from the support wall, the mounting support having an upper horizontal limb which is displaceable upwardly and downwardly, a lower horizontal limb and a vertical limb disposed at an exit end of the apparatus, the frame-like mounting support having clamp means thereon, retractable pins (16) for contacting the spacer frames (19), said pins being disposed on said vertical limb (14, 14") and on said horizontal limbs (12, 15) of the frame-like support (8) in the area between the support wall (1) and clamp means (17, 17') also on said vertical and horizontal limbs, said clamp means (17, 17') comprising clamp abutments (22,32) fixedly mounted on the limbs (12, 14, 14", 15) of the frame-like mounting support (8) and clamp members (23,33) which are pivotable to a position over the clamp abutments (22, 32) and movable toward the latter into a position to hold a spacer frame (19) against said abutments.

4,495,024

METHOD FOR DEPOSITION OF FLUID AND GASEOUS MEDIA ON SUBSTRATES FOR THEIR TRANSPORT

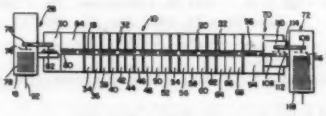
Edward Bok, Burg. Amersfoordtlaan 82, 1171 DR Badhoevedorp, Netherlands

PCT No. PCT/NL82/00027, § 371 Date Apr. 25, 1983, § 102(e) Date Apr. 25, 1983, PCT Pub. No. WO83/00774, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 25, 1982, Ser. No. 491,318

Int. Cl.³ B44C *1/22;* **B08B** *5/04;* **C23C** *13/08;* **B05D** *5/12*

U.S. Cl. 156—646 **23 Claims**



1. Method of transporting and processing substrates within a confined passageway comprising:

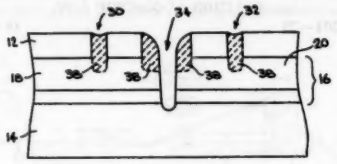
a. supplying a fluid medium through a supply channel intersecting the passageway, and

b. discharging said fluid medium through a discharge channel intersecting said passageway adjacent said supply channel, such that the moving fluid medium cushions, while transporting the substrate in said passageway.

4,495,025
PROCESS FOR FORMING GROOVES HAVING DIFFERENT DEPTHS USING A SINGLE MASKING STEP

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 6, 1984, Ser. No. 597,617
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—648 19 Claims



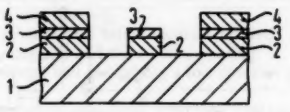
1. A process for forming grooves of different depths in a wafer of semiconductor material utilizing a single masking step, said process comprising the steps of:
depositing a first protective layer over the surface of a substrate of said semiconductor material;
depositing a masking layer of photoresist material over the surface of said first protective layer;
optically exposing said masking layer of photoresist material to define within said masking layer of photoresist material images for a first type groove and a second type groove, where said first type groove image is narrower in width than said second type groove image;
developing said masking layer of photoresist material to expose regions of said first protective layer where grooves of said first type and said second type are to be formed;
etching said exposed regions of said first protective layer to expose regions of said substrate where grooves of said first type and said second type are to be formed;
etching said exposed regions of said substrate to form grooves of said first type and said second type, such that said first type groove is narrower in width than said second type groove;
stripping said masking layer of photoresist material from said first protective layer;
depositing a second protective layer of a predetermined thickness over said first protective layer and over said first type groove and said second type groove such that said first type groove is substantially filled in and said second type groove is partially filled in;
anisotropically etching the second protective layer so as to remove said second protective layer from the bottom of said second type groove exposing a region of said substrate thereunder; and
etching said second type groove so as to penetrate to a desired depth the exposed region of said substrate thereunder.

4,495,026
METHOD FOR MANUFACTURING METALLIZED SEMICONDUCTOR COMPONENTS

Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,574
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232837
Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—652 6 Claims

1. A method for the manufacture of a pressure-contacted thyristor wherein the emitter metal layer is thicker than the base metal layer, comprising the following steps in sequence:
(a) successively applying layers of aluminum, silver and aluminum on the thyristor substrate,
(b) applying a negative acting photoresist in selected areas of the emitter region to thereby form a predetermined conductivity pattern in said emitter region,
(c) applying a positive acting photoresist in selected areas of the base region to thereby form a predetermined conductivity pattern in said base region,
(d) etching away areas of the uppermost aluminum layer at locations of the substrate which are not covered by either type of photoresist utilizing a solvent which does not significantly attack said silver layer,



(e) etching away the intermediate silver layer which is not covered by either type of photoresist, utilizing a solvent which does not significantly attack said aluminum layers,
(f) removing the positive acting photoresist,
(g) etching away the lowermost aluminum layer at locations on said substrate which are not covered by negative photoresist deposits with a solvent which does not significantly attack silver or said substrate, and
(h) removing the remaining negative photoresist deposits.

4,495,027
METHOD OF MAKING AN ORIENTED MULTILAYER HEAT SEALABLE PACKAGING FILM

John R. Wagner, Jr., Rochester, and Carl C. Hein, Pittsford, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 355,427, Mar. 8, 1982, Pat. No. 4,447,494.
This application Feb. 3, 1984, Ser. No. 576,972
Int. Cl.³ B29D 3/00
U.S. Cl. 156—244.11 4 Claims

1. The method for producing a heat sealable multiply film structure comprising:
coextruding a substrate layer comprising homopolymer polypropylene with a layer consisting essentially of a random copolymer of ethylene and propylene on at least one side of said polypropylene layer, said copolymer containing from about 0.5 to about 6% by weight of ethylene and about 94 to about 99.5% by weight of propylene:
biaxially orienting the coextrudate;
applying a primer coating to the surface of at least one random copolymer layer;
applying a heat sealable layer on said primer coating, said heat sealable layer comprising a vinylidene chloride copolymer containing at least 50% by weight of vinylidene chloride; and
aging the structure for a time and at a temperature sufficient to yield a heat seal strength between facing heat sealed layers greater than that obtained in the absence of said aging.

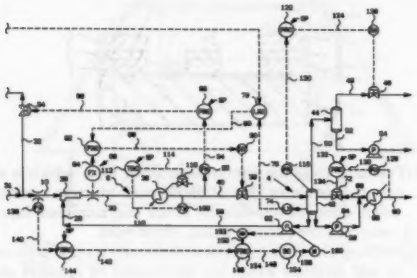
4,495,028
PROCESS CONTROL FOR FLASH CONCENTRATING SOLUTIONS CONTAINING POLYOLEFINS

Fred Rowe, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 278,129, Jun. 26, 1981, Pat. No. 4,375,524.
This application Sep. 29, 1982, Ser. No. 427,247
Int. Cl.³ B01D 3/42; F17D 3/01
U.S. Cl. 159—47.1 5 Claims

1. A method comprising:
(a) removing liquid from a first zone;
pumping a first portion of the liquid to a second zone;
(c) recycling a second portion of the liquid to the first zone;

(d) sensing a first liquid level in the first zone and establishing a first signal representative of said first liquid level;
(e) sensing a second liquid level in the second zone and establishing a second signal representative of said second liquid level;
(f) comparing the first signal to the second signal and establishing a third signal representative of a predetermined relation ship between the first signal and the second signal;



(g) manipulating, in response to the third signal, the rate at which the first portion of liquid is pumped to the second zone;
(h) sensing the pressure of the first portion of the liquid and establishing a fourth signal representative of the pressure; and
(i) manipulating, in response to the fourth signal, the rate at which liquid is recycled to the first zone.

4,495,029

PROCESS FOR THE PREPARATION OF COATED PAPER AND CARDBOARD AND COATING MATERIALS FOR THE PERFORMANCE OF THE PROCESS

Kurt W. Bergmann, Brüggen, and Popko J. Westerhuis, Hückelhoven-Baal, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 131,860, Mar. 19, 1980, abandoned. This application Aug. 19, 1982, Ser. No. 409,361
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911679
Int. Cl.³ D21F *11/00*
U.S. Cl. 162—135 **15 Claims**

1. A process for preparing a coating paper substrate consisting essentially of preparing a raw paper substrate having a pH of less than about 6.5, applying a coating thereto composed of an aqueous dispersion of a plastic and inorganic pigments, the coating having a pH of more than about 6.5 wherein the particles of the plastic in the dispersion have a non-cation-active charge and wherein the coating also contains a material which does not affect the preparation or storage stability of the coating, but which in the pH-range below about 6.5 becomes highly cation-active resulting in solidification of the coating at the time of contact of the coating with the paper surface to minimize penetration of the coating into the paper, and then drying the thus applied coating.

4,495,030

FILTER PAPER

Robert D. Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1983, Ser. No. 561,752
Int. Cl.³ A62B *23/00, 23/04;* B01D *39/14, 39/16, 39/20*
U.S. Cl. 162—145 **8 Claims**

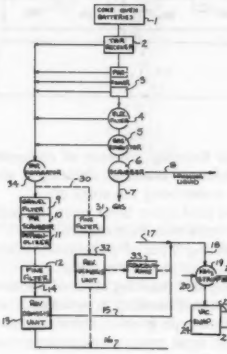
1. A high efficiency, toxic vapor absorptive, non-woven filter material comprising a wet-laid sheet containing fibrillated binder fiber, active carbon and submicron size glass fiber.

4,495,031

TREATMENT OF GAS CONDENSATES

Dieter Breidenbach, Waltrop; Wilhelm Mosebach, Kamen-Methler, and Winfried Dellmann, Kamen, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed May 13, 1983, Ser. No. 494,348
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219701
Int. Cl.³ C10B *57/00;* C02F *1/44*
U.S. Cl. 201—28 **15 Claims**



1. Method of treating a gas condensate recovered as waste water from the carbonization process or other themal process of upgrading coal for removing substantially the ammonium salt content therefrom prior to recycling the water to such process substantially to provide such process as a waste water-free process, which comprises
subjecting the gas condensate to reverse osmosis treatment to convert the gas condensate to a permeate of correspondingly reduced salt content and constituting a reusable source of water for such process, and a concentrate of correspondingly increased salt content,
recovering and recycling the permeate as a reusable source of water to such process, and
subjecting the concentrate to lye treatment and to ammonia stripping treatment to form a lye treated salt containing stripped concentrate.

4,495,032

SPLIT HUB WHEEL APPARATUS

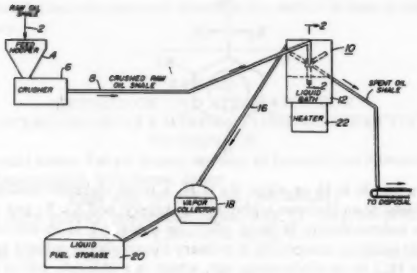
Carl G. Everman, P.O. Box 204, Grayson, Ky. 41143

Division of Ser. No. 255,126, Apr. 17, 1981, Pat. No. 4,410,416. This application Oct. 17, 1983, Ser. No. 542,834
Int. Cl.³ C10B *1/00, 47/00*
U.S. Cl. 202—105 **5 Claims**

1. An apparatus for the sequential loading and unloading of material in an air tight environment which comprises:
(a) a housing;
(b) a stationary hollow cylindrical axle having a top and bottom opening, said axle positioned within said housing;
(c) an inlet conduit disposed at an acute angle with respect to that portion of a vertical plane passing through said housing and above said axle, and said conduit having its outer open end communicating with the environment external to said housing and its inner open end communicating with said bottom opening in said axle;
(d) an outlet conduit disposed at an obtuse angle with respect to that portion of said vertical plane passing through said housing and above said axle, and said conduit having its outer open end communicating with the environment external to said housing and its inner open end communicating with said top opening in said axle;

(e) a rotatable cylindrical hollow shaft snugly fit around said axle, said shaft comprising three hollow, perforated spokes set approximately equidistant apart from each other and extending radially outward from said shaft, said spokes being closed at their outer ends and open at their inner ends contacting said shaft;

(f) a liquid bath maintained within said housing such that all three of said spokes are capable of contacting said liquid bath during one complete rotation of said shaft; and



(g) a means to rotate said shaft around said axle to allow for the successive alignment of said open ends of said spokes and said openings in said axle such that said material is sequentially loaded into one of said spokes at a time, dipped into said liquid bath while contained in said spoke and unloaded from said spoke while said housing is maintained at air tight conditions.

4,495,033

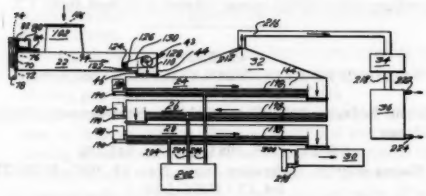
CONTINUOUS STILL

Robert G. Rathbun, 401 E. Toppenish Ave., and Albert J. Thalheimer, Rte. 3 Box 3718, both of Toppenish, Wash. 98948

Filed Jul. 20, 1981, Ser. No. 285,354

Int. Cl.³ B01D *3/04*

U.S. Cl. 202—118 **9 Claims**



5. A continuous still for processing a plant comprising fiber and organic material to separate said organic material, said continuous still comprising:

a. a feed unit having a first inlet opening and a first outlet opening;

b. said feed unit comprising first screw and a second screw;

c. said first screw and said second screw overlap;

d. said feed unit being enclosed between said first inlet opening and said first outlet opening;

e. said plant being introduced into said feed unit through said first inlet opening;

f. said first screw and said second screw each having at least a large first pitch and a small second pitch for said pitch to contact said first pitch and then said second pitch to form a plug in said feed unit to prevent vapors of said organic material escaping through said first inlet opening;

g. a cooking unit having a second inlet opening and a second outlet opening;

h. said first outlet opening, operatively, connecting with said second inlet opening;

i. a collector means operatively connecting with said cooking unit to collect vapors of said organic material;

j. said cooking unit comprising a third screw to agitate said plant to assist in separating said vapors of organic material from said fiber;

k. a discharge unit having a third inlet opening and a third outlet opening;

l. said second outlet opening operatively connecting with said third inlet opening;

m. said discharge unit being enclosed between said third inlet opening and said third outlet opening;

n. said discharge unit comprising a fourth screw and a fifth screw;

o. said fiber being introduced from said cooking unit into said discharge unit through said third inlet opening;

p. said fourth screw and said fifth screw overlap and each having a large first pitch and a large second pitch for said fiber to contact said first pitch and then said second pitch to form a plug in said discharge unit to prevent said vapors of organic material escaping through said third outlet opening;

q. said fiber leaving said discharge unit through said third outlet opening; and,

r. a means to introduce steam into said cooking unit to form said vapors of organic material from said organic material.

4,495,034

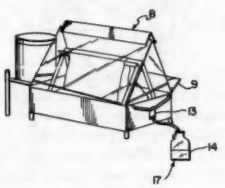
WASTE EFFLUENT TREATMENT AND SOLVENT RECOVERY SYSTEM

Frank Lucas, Rte. 2, Box 297, Centreville, Md. 21617

Continuation of Ser. No. 156,582, Jun. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 951,877, Oct. 16, 1978, abandoned. This application Apr. 29, 1982, Ser. No. 373,154

Int. Cl.³ C02F *1/14*; B01D *3/02*

U.S. Cl. 202—181 **2 Claims**



1. A chemical waste effluent treatment and solvent and solids recovery system for inorganic and organic solutions comprising:

a support;

a primary reservoir on said support receiving solution to be treated;

a solar distilling unit adjacent said support including:

a secondary reservoir;

a frame extending above said secondary reservoir and being adjustable in height,

a trough on an uppermost portion of said adjustable frame,

absorbent means draped over said trough and both sides of said frame and extending downwardly into said reservoir, said absorbent means being aligned parallel to the rays of sun,

means connecting said primary reservoir to said trough for gravity fluid flow from said primary reservoir to said trough,

automatic leveling means attached to said frame and operatively associated with said connecting means for maintaining a desired level of solution in said secondary reservoir by continuously regulating flow through said connecting

means from said primary reservoir to said trough whereby overflow from said trough flows down said absorbent means to said secondary reservoir,

a dome comprising glass panel covering and enclosing on both opposite sides of said secondary reservoir, said frame, said trough, and said absorbent means, said panels being aligned with said frame and serving as a condensing surface for solvent evaporated from said absorbent means, said dome having a peak,

collecting troughs at a lowermost portion of said panels for receiving and collecting condensed solvent,

at least one auxilliary mirror located adjacent outside said dome reflecting additional sunlight thereinto, and

a bonnet shading said peak of said dome and the uppermost portions on both sides thereof, the ratio of height of the frame carrying the absorbent means to the height of the interior of said dome being adjustable to enable selective collection of more volatile solvents;

chemical trap means for additional treatment of said distilled water;

transfer means for transferring said distilled solvent from said collecting troughs to said chemical trap means; and

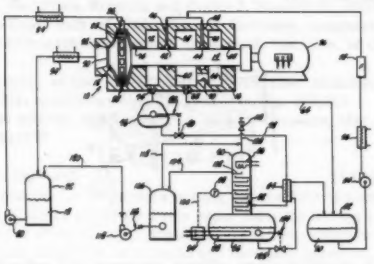
product collection means connected to said chemical trap means for collecting the additionally treated distilled solvent.

4,495,035

FLUID HANDLING METHOD WITH IMPROVED PURIFICATION

Judson S. Swearingen, 24703 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Mar. 6, 1981, Ser. No. 241,120
Int. Cl.³ B01D *3/34*; C10M *11/00*; F01M *11/03*
U.S. Cl. 203—23 **15 Claims**



1. In a process for effecting a pressure change in a working fluid by passing the working fluid through a rotor and wherein a shaft extends longitudinally from and rotates with said rotor within a surrounding housing means which defines a contact zone between the rotor and a first seal means generally surrounding the shaft in axially spaced relation to the rotor to receive a lubricant fluid and a contact fluid, said lubricant fluid having a minimum boiling point and an additive fluid mixed therewith is injected into the first seal means adjacent the shaft at a pressure sufficient to cause the lubricant fluid to flow axially toward the rotor, the steps comprising:

collecting from said contact zone a composite liquid comprising said contact fluid, said additive fluid and said lubricant fluid; and

separating said contact fluid from said composite liquid in the presence of said additive fluid having a boiling point greater than the maximum boiling point of said contact fluid, but less than the minimum boiling point of said lubricant fluid.

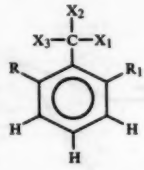
4,495,036

ELECTROCHEMICAL CHLORINATION PROCESS

Ying-Hung So, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

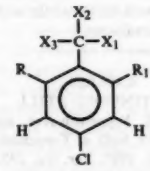
Filed Jul. 11, 1983, Ser. No. 512,263
Int. Cl.³ C25C *1/00*
U.S. Cl. 204—59 R **20 Claims**

1. A process comprising electrolytically chlorinating an alkyl aromatic compound of Formula I:



I

wherein R is H or alkyl; R_1 is H, a weak electron-donating moiety or an electron-withdrawing moiety; and X_1, X_2 and X_3 are independently H, halo, alkyl, or haloalkyl; in an electrolytic solution comprising a primary cyano alkane solvent and dry HCl or an electrolytic salt, which is a chloride salt of an alkali metal or an alkaline earth metal, by passing from an anode, which has a surface which is substantially free of cyclodextrin or derivatives thereof, to a cathode an electric current under reaction conditions such that there is formed a compound of formula II:



II

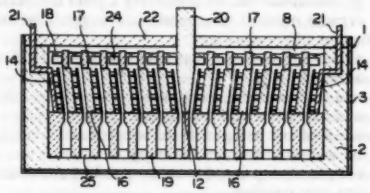
wherein R, R_1, X_1, X_2 and X_3 are as defined for formula I, with the proviso that the ratio of compound II formed to the corresponding ortho-chloro isomer formed is at least about 1.7.

4,495,037

METHOD FOR ELECTROLYTICALLY OBTAINING MAGNESIUM METAL

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,255
Claims priority, application Japan, Nov. 19, 1982, 57-204229
Int. Cl.³ C25C *3/04*
U.S. Cl. 204—70 **1 Claim**



1. In a method of electrolytically obtaining magnesium metal from an electrolytic bath which comprises $MgCl_2$, comprising: preparing and holding a fused bath in an arrangement which comprises two separate spaces, depositing magnesium metal cathodically and chlorine gas anodically in the first space,

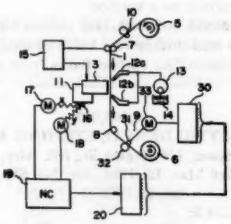
transferring magnesium metal carried by the bath to the second space through a channel means arranged between the spaces, and allowing magnesium metal, for recovery, to collect to a major part at the surface of bath in the second space, the improvement in which said electrolytic bath consists of $MgCl_2$ and NaCl, as well as at least one compound selected from KCl and LiCl but without $CaCl_2$, so composed as to exhibit an electrical conductivity of $2.4\Omega^{-1}cm^{-1}$ and a density greater by 0.02 to 0.10 g/cm^3 than magnesium at circumstantial temperatures employed, so the magnesium metal in transfer may be held for the substantial part under the surface until the metal enters the second space and ascend to the surface in time in said space.

4,495,038

METHOD OF AND APPARATUS FOR ELECTROEROSIVELY WIRE-CUTTING A CONDUCTIVE WORKPIECE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 10, 1982, Ser. No. 406,891
Claims priority, application Japan, Aug. 12, 1981, 56-127087
Int. Cl.³ C25F *3/14*; B23K *9/16*
U.S. Cl. 204—129.2 **18 Claims**



1. A method of electroerosively wire-cutting a conductive workpiece, comprising the steps of:

(a) axially advancing a continuous electrode wire stretched under tension across wire-supply and wire-takeup sides to cause it to continuously travel through the workpiece between a pair of wire-guide members at a predetermined rate of travel;

(b) passing an electroerosion machining current between the traveling electrode wire and the workpiece across a machining gap flushed with a machining fluid;

(c) advancing the traveling axis of said electrode wire relative to said workpiece along a prescribed cutting path having at least one corner to advance electroerosion machining of said workpiece along said cutting path; and

(d) temporarily increasing the rate of axial advance of said electrode wire immediately upon its change of course at said corner along said path.

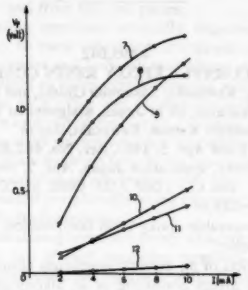
4,495,039

METHOD FOR ACTIVATING A PYROCARBON ELECTRODE TIP

Osvaldo Cerise, Doues; Pietro Arru, and Franco Valiana, both of Turin, all of Italy, assignors to Sorin Biomedica S.p.A., Saluggia, Italy

Filed Aug. 6, 1982, Ser. No. 405,784
Claims priority, application Italy, Aug. 7, 1981, 68103 A/81
Int. Cl.³ C25B *11/12*
U.S. Cl. 204—130 **4 Claims**

1. Method for activating a pyrocarbon tip for an electrode for a cardiac stimulator, consisting of subjecting the tip to an anodic electrolytic treatment in an electrolyte composed of a mixture of 50 parts by weight of concentrated sulphuric acid (98% by weight) and 50 parts by weight of concentrated nitric acid (65% by weight), said electrolytic treatment being carried



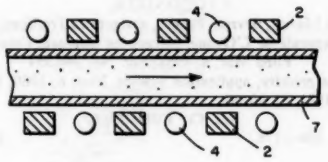
out with a voltage greater than 1 V and a current density greater than 3 mA/mm^2.

4,495,040

PHOTOMAGNETIC CATALYSIS PROCESS

C. Richard Panico, Medford, Mass., assignor to Xenon Corporation, Wilmington, Mass.

Continuation-in-part of Ser. No. 491,016, May 3, 1983, and a continuation-in-part of Ser. No. 401,318, Jul. 23, 1982, Pat. No. 4,443,533. This application May 12, 1983, Ser. No. 493,779
Int. Cl.³ B01J *19/12, 19/24*
U.S. Cl. 204—155 **30 Claims**



1. The method of catalyzing a chemical reaction in a substance of a type in which a chemical reaction can be catalyzed by the combined effects of a magnetic field and electromagnetic radiation, said method comprising the step of applying to said substance electromagnetic radiation and a pulsed magnetic field of sufficient (and greater than ambient) strength to catalyze said chemical reaction, said magnetic field being generated by means other than a discharge through a straight or flat serpentine flash lamp, and said magnetic field being other than that of said electromagnetic radiation.

4,495,041

PHOTOCHEMICAL PROCESS USING SHAPE-SELECTIVE PHOTOASSISTED HETEROGENOUS CATALYST COMPOSITIONS

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,550
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R **22 Claims**

1. A method of catalyzing highly specific photochemical reactions in a reaction system by incorporating a photoassisting species within a zeolite catalyst to form a catalyst composition, which method comprises:

exposing the catalyst composition to radiant energy selected from the group consisting of ultraviolet radiation and visible light while simultaneously contacting the catalyst

composition with one or more reactants, and removing the resulting products from the reaction system.

4,495,042

PHOTO-CURABLE EPOXY RESIN COMPOSITION

Shuzi Hayase, Kawasaki; Yasunobu Onishi, and Shuichi Suzuki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 5, 1983, Ser. No. 482,305
Claims priority, application Japan, Apr. 7, 1982, 57-56644
Int. Cl.³ C08J *3/28*; C08L *63/00*
U.S. Cl. 204—159.14 7 Claims

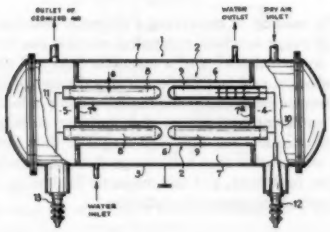
1. A photo-curable epoxy resin composition, comprising:
an epoxy resin;
a combination of an organic aluminum compound selected from the group consisting of an alkoxy aluminum compound, an aryloxy aluminum compound, an acyloxy aluminum compound, and an aluminum chelate compound, wherein said organic aluminum compound is present in an amount of from about 0.001 to 10% by weight based on the epoxy resin; and
a silicon compound comprising an o-nitrobenzyloxy group as a catalyst, wherein said silicon compound is present in an amount of from about 0.1 to 20% by weight based upon the epoxy resin.

4,495,043

PROCESS FOR SUPPLYING ELECTRIC POWER TO AN OZONIZER

Maurice Marets, Sevran, France, assignor to Trailigaz, Compagnie Generale de L'Ozone, Garges les Gonesse, France

Filed Mar. 4, 1981, Ser. No. 240,351
Claims priority, application France, Mar. 6, 1980, 80 05012; Jan. 7, 1981, 81 00130
Int. Cl.³ C01B *13/10*
U.S. Cl. 204—176 12 Claims



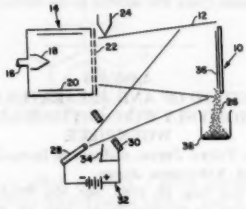
1. In a method for supplying electric power to an ozone producing element comprising at least two conductive electrodes disposed in facing relation to each other and between which electrodes a gas to be ozonized flows, comprising the step of applying to said electrodes sequential bursts of electrical energy with a voltage whose amplitude value is capable of producing electronic discharges between electrodes with each burst comprising a wave train of alternating voltage, the bursts being separated from each other in time by time periods during which the volume of gas treated by a first burst will be at least partly evacuated from the space between the electrodes prior to the application of the second burst, and the step of providing to said electrodes an electrical condition during said time periods between bursts to cause gas ions resulting from the said first burst to remain between said electrodes.

4,495,044

DIAMONDLIKE FLAKES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 495,381, May 17, 1983, Pat. No. 4,437,962. This application Mar. 19, 1984, Ser. No. 591,089
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C 19 Claims



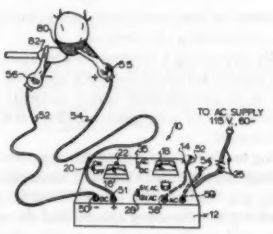
1. A method of making diamondlike carbon flakes comprising the steps of
depositing carbon on a surface
creating diamond bonds in said carbon by subjecting said carbon on said surface to a beam of ions, and
removing diamondlike carbon flakes from said surfaces.

4,495,045

ELECTROLYTIC DENTAL ETCHING APPARATUS

Thomas R. Jackson, 146 Renfro St., Mt. Airy, N.C. 27030

Filed Mar. 13, 1984, Ser. No. 589,155
Int. Cl.³ C25D *17/12*
U.S. Cl. 204—224 R 1 Claim



1. A chairside apparatus for etching and thereafter removing any oxide coating from an electrically conductive surface of an installed dental device in a patient preparatory to bonding a covering material to the surface so etched, comprising:
(a) AC-energized power supply means providing:
(i) a source of DC voltage within the range of 6–12 volts;
(ii) a source of AC voltage within the range of 6–12 volts;
(b) a pair of leads;
(c) means enabling one end of said pair of leads to be selectively connected to either said DC or AC source to provide the corresponding selected said voltage at the opposite terminal ends thereof;
(d) a disposable fibrous swab mouunted on the terminal end of the first of said leads and being sufficiently small in size to enable the said etching and oxide coating removal to be accomplished chairside with said device installed;
(e) a dilute acid stored in said swab; and
(f) means for detachably connecting the terminal end of the second of said leads to a selected location on said electrically-conductive surface such that said etching may be

accomplished by intermittently touching said swab to said surface when said leads are connected to said DC source and removal of said coating can be accomplished by intermittently touching said swab to said surface when said leads are connected to said AC source.

4,495,046

ELECTRODE CONTAINING THALLIUM (III) OXIDE

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 496,284, May 19, 1983,. This application Aug. 18, 1983, Ser. No. 524,394

Int. Cl.³ C25F *1/00*; C25B *11/00*

U.S. Cl. 204—242 **67 Claims**

1. An electrode useful in an electrolytic cell comprising the compound thallium (III) oxide, said electrode capable of generating a current of at least 10 milliamperes when immersed in a 4.0 molar aqueous solution of sodium chloride and electrically connected to a platinum counter electrode.

4,495,047

ELECTROLYTIC REDUCTION CELLS

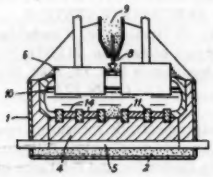
Adam J. Gesing, and Ernest W. Dewing, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Jun. 23, 1982, Ser. No. 391,405

Claims priority, application United Kingdom, Jun. 25, 1981, 8119588

Int. Cl.³ C25C *3/08, 7/02*; C25B *11/12*

U.S. Cl. 204—245 **8 Claims**



1. An electrolytic cell for the production of metals by electrolysis of a molten electrolyte which is less dense than the product metal, said cell including a cathodic carbon floor having steel collector bars embedded therein, and barrier members arranged to extend upwardly from the cell floor to a height approximating to the normal maximum operating level of product metal in the cell, said barrier members being electrically nonconductive at least in a direction perpendicular to their length and having at least a surface layer of material resistant to product metal, said barrier members being arranged transversely to the flow of horizontal currents in the product metal on the cathodic cell floor,

wherein a plurality of said barrier members, spaced apart, are arranged substantially parallel with the longitudinal axis of the cell.

4,495,048

APPARATUS FOR ELECTROLYSIS OF SALINE WATER

Katsuyuki Murakami, Maebashi; Kaoru Hirakata, Yoshiokamura; Shinichi Shimoda, Fujimimura, and Reiichi Itai, Maebashi, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,472

Claims priority, application Japan, May 22, 1981, 56-77470

Int. Cl.³ C25B *1/14, 1/26*

U.S. Cl. 204—267 **6 Claims**

1. A filter-press type electrolytic cell, wherein sodium hypochlorite is produced by diaphragmless electrolysis of saline water, comprising:

first and second end plates vertically disposed in spaced parallel relationship;

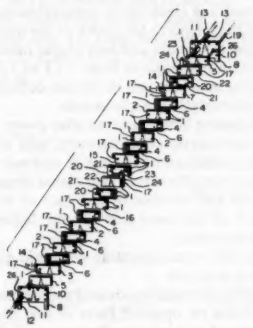
a plurality of planar electrodes successively separated from each other and from the end plates;

planar insulating members vertically disposed in parallel relationship to each other and interposed between said planar electrodes and between said planar electrodes and said end plates to successively separate said planar electrodes from each other and to separate said planar electrodes from said end plates, thereby forming a plurality of electrolytic copartments between successive electrodes;

said first end plate having a hole in the lower part thereof on a side for receiving an electrolyte inlet pipe, and plurality of holes located peripherally along the marginal edges for receiving bolts therethrough;

one of said insulating members being adjacent said first end plate, said one of said insulating members being a first insulating pipe plate having a hole in the lower part on one side thereof for receiving said electrolyte inlet pipe, said electrolyte inlet pipe passing through said first end plate and disposed substantially perpendicularly to said first insulating pipe plate;

one of said planar electrodes being adjacent said first insulating pipe plate, said one of said planar electrodes being a terminal anode having a hole in a lower part on a side for receiving electrolyte from the electrolyte inlet pipe, said terminal anode having a protruding upper edge serving as



an electrical connection terminal, said terminal anode consisting essentially of a substrate of titanium or an alloy thereof and a coating applied on the surface of the terminal anode coming in contact with the electrolyte, said coating comprising a ternary mixture of platinum-palladium oxide-ruthenium dioxide having a composition ranging from 3 to 42% by weight of platinum, from 3 to 4% by weight of palladium oxide and from 42 to 94% by weight of ruthenium dioxide, and titanium dioxide in a ratio ranging from 20 to 40% by weight based on the weight of said ternary mixture;

the second end plate having a pair of holes, one of said holes being in an upper part of one side of said second end plate and the other of said holes being in a lower part of the same side of said second end plate, each of said pair of holes receiving an electrolyte outlet pipe, said second end plate also having a plurality of holes peripherally along the marginal edges for receiving bolts therethrough;

another of said insulating members being adjacent said second end plate, said another of said insulating members being a second insulating pipe plate having a pair of holes for receiving said electrolyte outlet pipes, one of said pair of holes being in an upper part of one side of said another of said insulating members and the other of said pair of holes being in a lower part on the same side of said another insulating member, said electrolyte outlet pipes passing through said pair of holes in said second end plate and

being disposed substantially perpendicularly to said second insulating pipe plate;

another of said planar electrodes being adjacent said second insulating pipe plate, said another of said planar electrodes being a terminal cathode having a pair of holes for passing electrolyte to the electrolyte outlet pipes, one of said pair of holes being in an upper part of one side of said terminal cathode and another of said pair of holes being in a lower part on the same side of said terminal cathode, said terminal cathode having a protruding upper edge serving as an electrical connection terminal, said terminal cathode consisting essentially of titanium or an alloy of titanium;

said planar insulating members including at least one intermediate insulating member comprising an insulating frame gasket cut out at a central portion to form at least one hollow electrolytic compartment between successive electrodes;

said plurality of planar electrodes including at least one intermediate electrode comprising a bipolar electrode having a pair of holes for passing electrolyte therethrough, one of said pair of holes being in an upper part of one side of said intermediate electrode and the other of said pair of holes being in a lower part on the same side of said intermediate electrode; said intermediate electrode having the same coating on its anode surface as that of the terminal anode;

the holes for passing electrolyte in said planar electrodes being disposed on opposite sides of successive electrodes to provide a sinuous flow path for the electrolyte through said at least one electrolytic compartment;

the ratio of the length to the width of the outer dimension of said planar electrodes and said planar insulating members being within the range of from 1:1.1 to 1:10;

said insulating members and electrodes defining at least three hollow electrolytic compartments;

a planar degassing block inserted after every group of 3 to 7 of said electrolytic compartments, said degassing block comprising a pair of holes, one of said pair of holes being in an upper part of a side of said planar degassing block for passing gas and another of said pair of holes being in a lower part of the same side of said degassing block for passing electrolyte;

a degassing pipe communicating with said gas passing hole for passing gas; and

an intermediate terminal anode and an intermediate terminal cathode being on opposed faces of said planar degassing block, each of said intermediate terminal anode and said terminal cathode having a pair of holes for passing electrolyte, one of said pair of holes being in an upper part of said intermediate terminal anode and said intermediate terminal cathode on the same side and another of said holes being in the lower part on the same side thereof; and a protruding upper edge serving as an electrical connection terminal on the other side of said intermediate terminal anode and said intermediate terminal cathode;

and wherein the ratio of the length to the width of the outer dimension of said planar degassing block, said intermediate terminal anode and said intermediate terminal cathode is within the range of from 1:1.1 to 1:10.

4,495,049

ANODE FOR MOLTEN SALT ELECTROLYSIS

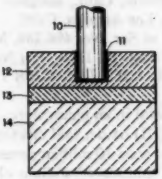
Duane R. Secrist, Elizabethton, and James M. Clark, Johnson City, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 491,089, May 3, 1983,. This application Nov. 21, 1983, Ser. No. 554,068

Int. Cl.³ C25B *11/04*

U.S. Cl. 204—292 **7 Claims**

1. A permanent cermet anode for electrowinning of aluminum and other metals by molten salt electrolysis having one end attached to a current source and the other end in contact with the molten electrolyte, said ends having different compositions, the end attached to the current source having from 30% to 80% by volume of a metal selected from the group consisting of Cu, Ni, Fe, Cr and alloys thereof and from 20% to 70% by volume of a ceramic component, the end in contact with the electrolyte having from 75% to 90% by volume of a ceramic component and from 10% to 25% by volume metal selected from said group of metals, wherein the anode is formed by sintering a mixture of metal and ceramic powders to form a hard dense body substantially resistant to attack by the



molten salt environment, wherein the metal content of said anode increases progressively from one end of the anode to the other, the end attached to the current source containing sufficient metal to render the cermet brazable to a lead-in current conductor and having a resistivity less than 1×10^{-3} ohm-cm at 950° C., the end in contact with the electrolyte having a resistivity less than 1×10^{-1} ohm-cm at 950° C. with a negative temperature coefficient of resistivity.

4,495,050

TEMPERATURE INSENSITIVE POTENTIOMETRIC ELECTRODE SYSTEM

James W. Ross, Jr., 39 Hurlburt St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 211,351, Nov. 28, 1980, abandoned. This application Feb. 16, 1983, Ser. No. 466,856

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—408 **7 Claims**

1. A potentiometric electrode measuring system characterized by rapid response and relative insensitivity to temperature changes and having measuring and reference electrodes, each having: an inert electrode lead, and a filling solution including at least a redox couple having

(i) an exchange current of the order of 10^{-6} amperes/cm² or greater, and

(ii) a ratio of reduced to oxidized forms of such magnitude as to provide an electrode potential that is invariant with temperature.

4,495,051

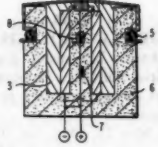
GALVANIC CELL TYPE OXYGEN SENSOR

Yuko Fujita; Hisashi Kudo, and Ikuo Tanigawa, all of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Sep. 30, 1983, Ser. No. 538,013

Int. Cl.³ G01N *27/30, 27/54*

U.S. Cl. 204—408 **4 Claims**



1. A galvanic cell type oxygen sensor comprising

(A) a galvanic cell comprising (i) a cathode made up of metal effective for the electrolytic reduction of oxygen, (ii) an

anode made up of lead and (iii) an electrolyte comprising an aqueous mixed solution of an organic acid salt and a lead compound, wherein the pH value of said electrolyte is from 4 to 7, and wherein said galvanic cell is so constructed that oxygen diffusion to said cathode is controlled by a polymer film; pg.23

(B) a resistor; and

(C) a thermistor

wherein said resistor (B) and thermistor (C) are connected between said cathode and anode.

4,495,052

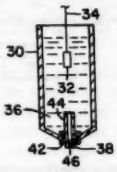
REPLACEABLE JUNCTIONS FOR REFERENCE ELECTRODES

Donald P. Brezinski, Millis, Mass., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 419,001, Sep. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,788, Dec. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,597

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—435 **18 Claims**



1. In a reference electrode comprising an enclosure containing a half-cell electrode, a half-cell electrolyte, and a reference junction positioned in an outlet for the electrolyte, the half-cell electrode bing connectable to an external measuring means, the improvement which comprises a removable and replaceable reference junction comprising a removable glass encasing body encasing a porous member which is a porous ceramic, said porous member being in length only up to about one half the length of the glass encasing body, fixedly inserted through said outlet which comprises a compressible grommet, in which said glass encasing body is glass capillary tubing bonded to said porous member, said reference junction being removable and replaceable by the laboratory practitioner with simple laboratory tools.

11. A reference junction for a reference electrode, said reference junction comprising a glass encasing body encasing a porous member which is a porous ceramic having a length up to one half the length of the glass encasing body, in which said glass encasing body is glass capillary tubing which is bonded to said porous member.

4,495,053

REPLACEABLE JUNCTIONS FOR REFERENCE ELECTRODES

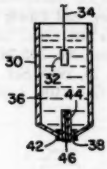
Raymond L. Souza, Woburn, Mass., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 424,847, Sep. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 218,789, Dec. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,972

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—435 **10 Claims**

1. A reference electrode comprising an enclosure containing a half-cell electrode, a half-cell electrolyte, and a reference junction positioned in an outlet for the electrolyte, the half-cell electrode being connectable to an external measuring means, in which said reference junction comprises a removable and replaceable reference junction fixedly inserted through said outlet, wherein said reference junction comprises a removable glass encasing body encasing a porous member which is a porous ceramic and said outlet comprises a compressible grommet, in which said glass encasing body is glass capillary tubing bonded to said porous member, said reference junction being removable and replaceable by the laboratory practitioner with simple laboratory tools.



7. A reference junction for a reference electrode, said reference junction comprising a glass encasing body encasing a porous member which is a porous ceramic, in which said glass encasing body is glass capillary tubing which is bonded to said porous member.

4,495,054

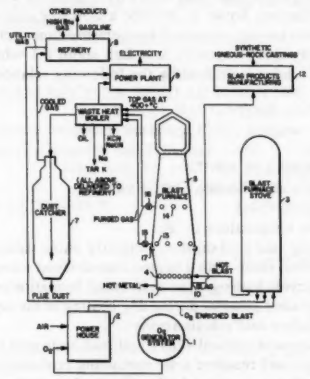
METHOD OF OPERATING A BLAST FURNACE TO EXTRACT CARBONACEOUS OIL AND GAS FROM BITUMINOUS MATERIALS

H. Bruce Claflin, 2436 Park Blvd., Upland, Calif. 91786

Filed Aug. 11, 1980, Ser. No. 176,910

Int. Cl.³ C10G *1/02*; C10B *53/06, 47/04*

U.S. Cl. 208—8 R **21 Claims**



1. A method of operating a blast furnace to process a natural material selected from the group consisting of oil shale, oil sandstone, asphalt rock or mixtures thereof comprising:

charging a first carbonaceous material selected from the group consisting of oil shale, oil sandstone, asphalt rock or mixtures thereof and a second carbonaceous material to the top of a blast furnace;

burning the carbonaceous char material remaining when the burden reaches the lower portion of the blast furnace in front of the primary tuyeres to provide a hot, upwardly-moving gas stream containing CO and H_2 to vaporize recoverable hydrocarbons contained in the carbonaceous material as the carbonaceous material moves downwardly through the blast furnace;

withdrawing a gas containing hydrocarbons, CO, H_2 and vaporized carbonaceous oil and tar from near the top of the blast furnace; and

withdrawing molten slag from near the bottom of the blast furnace.

4,495,055

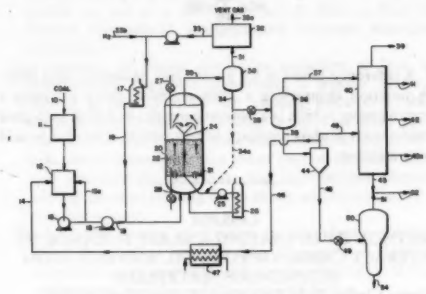
COAL CATALYTIC HYDROGENATION PROCESS USING DIRECT COAL SLURRY FEED TO REACTOR WITH CONTROLLED MIXING CONDITIONS

Alfred G. Comolli, Yardley, and Edwin J. Hippo, Morrisville, both of Pa., assignors to HRI, Inc., Gibbsboro, N.J.

Continuation-in-part of Ser. No. 365,767, Apr. 5, 1982,. This application Jan. 26, 1984, Ser. No. 574,223

Int. Cl.³ C10G *1/08*

U.S. Cl. 208—10 **20 Claims**



1. A process for catalytic hydrogenation of coal to produce increased yields of low boiling hydrocarbon liquid products and gas, the process comprising:

(a) mixing particulate coal with a hydrogenated coal-derived hydrocarbon liquid to provide a flowable coal-oil slurry material having a standard temperature-time units (STTU) severity index exposure less than about 0.1 wherein said STTU index is defined by the following relation:

$$STTU = Ate^{-B/T}$$

where

A = about 1.12×10^{15}

t = the coal residence time in minutes

B = about 45045

T = the temperature in °R;

(b) feeding said coal-oil slurry directly into a catalytic reaction zone, along with a heated coal-derived recycle liquid and recycle hydrogen, so as to avoid formation of thermal retrograded material during any heating of the coal occurring before said reaction zone;

(c) passing said coal-oil slurry and said hydrogen upwardly through said reaction zone containing coal-derived liquid and hydrogen and an ebullated bed of particulate catalyst maintained at 650°–900° F. temperature and 1000–5000 psi hydrogen partial pressure and 7.5–90 lb/hr ft^3 space velocity for rapidly heating and reacting the coal therein and providing catalytic hydrogenation reactions to produce coal-derived hydrogenated material therein;

(d) withdrawing a portion of said coal-derived liquid from said reaction zone at a level above said ebullated bed of particulate catalyst adjusting the withdrawn liquid temperature as required to control said reaction zone temperature, and recycling the coal-derived liquid to the lower portion of the reaction zone;

(e) withdrawing from the upper part of said reaction zone a coal-derived hydrogenated material containing gas and liquid fraction, and phase separating said material into gaseous and liquid fractions;

(f) passing said liquid fraction to a liquid-solids separation step, from which an overhead liquid stream containing a reduced solids concentration is recycled to provide said hydrogenated coal-derived liquid for providing said coal-oil slurry; and

(g) recovering hydrocarbon gas and increased yields of low boiling hydrocarbon liquid products from the process.

4,495,056

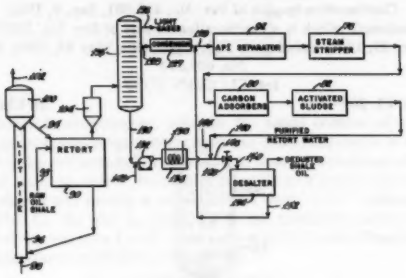
OIL SHALE RETORTING AND RETORT WATER PURIFICATION PROCESS

Dean G. Venardos, Naperville, and Colin G. Grieves, Oswego, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Apr. 16, 1982, Ser. No. 368,976

Int. Cl.³ C10G *1/02;* **C10B** *53/06;* **C02F** *3/12*

U.S. Cl. 208—11 R **7 Claims**



1. An oil shale process, comprising the steps of:

retorting raw oil shale in a surface retort to liberate an effluent product stream of hydrocarbons and oil shale retort water vapors containing oil shale particulates ranging in size from less than one micron to 1000 microns, organic carbon, ammonia, and chemical oxygen demand;

partially dedusting said effluent product stream to separate and remove some of said oil shale particulates from said effluent product stream;

separating said partially dedusted, effluent product stream into at least one fraction of shale oil, a fraction of hydrocarbon gases and a fraction of oil shale retort water vapors containing shale oil, oil shale particulates ranging in size from less than one micron to 1000 microns, organic carbon, ammonia and chemical oxygen demand in at least one quench tower;

condensing said fraction of oil shale retort water vapor into a fraction of oil shale retort water;

separating and removing a substantial portion of said shale oil from said fraction of oil shale retort water by gravity separation and sedimentation;

separating and removing a substantial portion of said oil shale particulates from said fraction of oil shale retort water in at least one oil shale separator selected from the group consisting of an air flotation unit, a clarifier, and a granular filter;

steam stripping and removing a substantial portion of said ammonia from said fraction of oil shale retort water in a stream stripper;

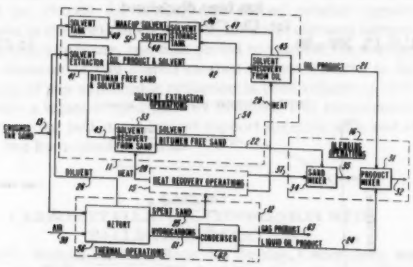
passing said steam stripped, oil shale retort water through a tank containing powdered activated carbon and activated sludge to substantially purify said oil shale retort water;

recycling and spraying some of said purified water from said tank containing powdered activated carbon and sludge in said quench tower to obtain heavy shale oil, said sprayed water becoming contaminated in said quench tower with said shale oil and said oil shale particulates; and treating said contaminated water in said oil shale separator, steam stipper and tank along with said fraction of oil shale retort water.

4,495,057
COMBINATION THERMAL AND SOLVENT EXTRACTION OIL RECOVERY PROCESS AND APPARATUS

Bahram Amirijafari, 2051 Crestvue Cir., Golden, Colo. 80401, and Herbert E. Nuttall, Jr., 1445 Honeysuckle Dr., NE., Albuquerque, N. Mex. 87127

Filed May 7, 1982, Ser. No. 376,251
Int. Cl.³ C10G *1/02, 1/04, 1/00;* C10B *53/06*
U.S. Cl. 208—11 R **14 Claims**



1. A process for the production of upgraded oil and sand products during the separation of bitumen from tar sands and the like comprising the steps of:

subjecting a quantity of tar sand to a solvent extraction operation to yield a high viscosity oil product and a substantially bitumen-free sand product;

simultaneously subjecting an additional quantity of tar sand that has not been subjected to said solvent extraction operation to heat in a thermal operation that is operating in parallel with said solvent extraction operation in relation to incoming tar sand to said operations to yield a hot, low viscosity oil product and a hot and dry spent sand product;

recovering heat from said hot and dry spent sand and transferring the recovered heat to the solvent extraction operation to provide a substantial part of the heat requirement for the solvent extraction operation;

combining the low viscosity oil product with the high viscosity oil product to provide an upgraded synthetic crude product and combining the cooled spent sand with said, substantially bitumen free sand to provide an environmentally suitable waste sand product; and

removing solvent fractions from the high viscosity oil product and from the sand products of said solvent extraction operation and recycling said removed solvent fractions to said solvent extraction operation.

4,495,058
PROCESS FOR GENERATING SUPERHEATED STEAM USING RETORTED SOLIDS

Robert A. Farnham, San Rafael; Lawrence P. Zestar, Richmond, and Corey A. Bertelsen, Oakland, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 6, 1983, Ser. No. 501,592
Int. Cl.³ C10G *1/02*
U.S. Cl. 208—11 R **12 Claims**

1. A process for retorting particulate oil shale, which comprises:

(a) passing superheated steam through a bed comprising a mixture of the oil shale and hot combusted shale in a retort at a pyrolyzing temperature to recover a gaseous mixture of product vapors and steam and to separately recover a solid mixture of pyrolyzed shale and the combusted shale;

(b) condensing the steam in the gaseous mixture to recover water separately from the product vapors;

(c) heating the water in a steam generator to produce steam;

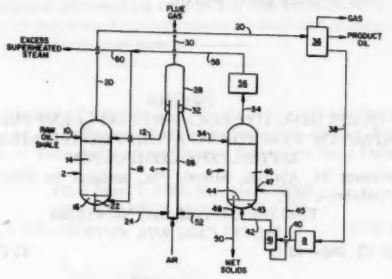
(d) passing the steam through a steam separator to separate the steam into wet steam and saturated steam;

(e) burning the solid mixture in a combustor to recover hot combusted shale;

(f) recirculating a first portion of the hot combusted shale to the retort;

(g) introducing a second portion of the hot combusted shale to a steam superheater to form a bed of solids therein;

(h) introducing the saturated steam into the bed of hot combusted shale solids in the superheater through the bottom of the bed at a rate sufficient to at least partially fluidize the solids in the bed and introducing the wet steam into the bed at a point above the bottom of the bed and further providing sufficient residence time for the steam in the bed to superheat the steam;



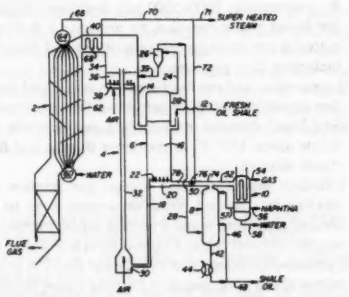
(i) recirculating at least a portion of the superheated steam to the retort; and

(j) recirculating the shale solids from the superheater to the combustor.

4,495,059
STEAM RECYCLE USED AS STRIPPING GAS IN OIL SHALE RETORTING

P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 12, 1983, Ser. No. 522,917
Int. Cl.³ C10G *1/00;* C10B *53/06*
U.S. Cl. 208—11 R **8 Claims**



1. A process for retorting oil shale which comprises:

(a) mixing in a retorting zone a particulate oil shale with a hot particulate heat-transfer solid in a ratio sufficient to raise the temperature of the oil shale to a retorting temperature;

(b) passing a non-oxidizing stripping gas containing noncondensable hydrocarbons and at least 50 percent by weight of steam through the mixture of oil shale and heat-transfer solid, whereby a mixture of stripping gas and evolved shale oil vapors is produced;

(c) separating a recycle gas from the mixture of shale oil vapor and stripping gas, said recycle gas comprising steam and non-condensable hydrocarbons;

(d) adding sufficient high quality, high pressure steam to the recycle gas using a steam injecting means to increase (i) the pressure of the resulting mixture of gases above that of the recycle gas to enable the use of the mixture as the stripping gas of step (b), and (ii) the weight percent of steam in the mixture to at least 50 percent; and

(e) using the mixture of recycle gas and steam of step (d) as the stripping gas of step (b).

4,495,060

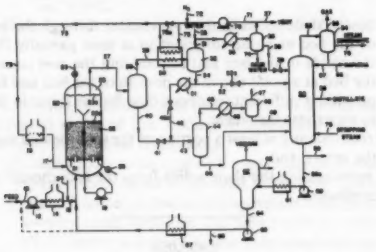
QUENCHING HYDROCARBON EFFLUENT FROM CATALYTIC REACTOR TO AVOID PRECIPITATION OF ASPHALTENE COMPOUNDS

Lawrence M. Abrams, Miami, Fla., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Dec. 27, 1982, Ser. No. 453,259

Int. Cl.³ C10G *9/16, 65/10*

U.S. Cl. 208—48 Q **12 Claims**



1. A process for high conversion of petroleum residua containing at least about 25 V % material boiling above about 1000° F. to produce lower boiling hydrocarbon liquid products, comprising:

(a) feeding a petroleum residua feedstock together with hydrogen into a reaction zone containing an ebullated catalyst bed, maintaining said reaction zone at 750°–900° F. temperature, 1000–5000 psig hydrogen partial pressure for liquid phase reaction to produce a hydroconverted material containing a mixture of gas and liquid fractions, including C_5+ portions;

(b) separating said gas fraction from said liquid fractions in a first separation zone to provide a first gas fraction and a first liquid fraction, and cooling said first gas fraction to below about 650° F. to condense the gas and form a gas-liquid mixture;

(c) further separating said cooled gas fraction from said mixture in a second phase separation zone to provide a second gas fraction and a second liquid fraction and cooling said second liquid fraction to below about 650° F.;

(d) pressure-reducing said first liquid fraction to a pressure below about 1000 psig and flashing vapor from the liquid fraction while mixing the resulting liquid with at least a portion of said cooled second liquid fraction to quench the liquid to a temperature below about 775° F., said cooled second liquid fraction having an API gravity not more than about 22° API higher than the API gravity of said first liquid fraction; and

(e) distilling said mixed liquid fractions to produce hydrocarbon distillate liquid products having normal boiling temperature below about 875° F. and a residual bottoms material.

4,495,061

HYDROCARBON CONVERSION CATALYST AND PROCESS USING SAID CATALYST

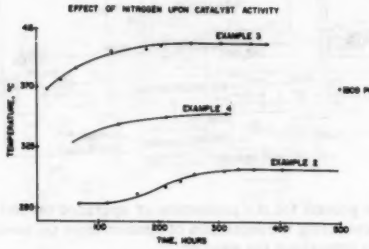
Jerome F. Mayer, San Anselmo, and Stephen J. Miller, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 160,033, Jun. 16, 1980, Pat. No. 4,313,817, which is a continuation-in-part of Ser. No. 21,751, Mar. 19, 1979, abandoned. This application Sep. 15, 1981, Ser. No. 302,014

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.³ C10G *65/12, 47/12*

U.S. Cl. 208—89 **31 Claims**



1. A hydrocracking process comprising contacting a hydrocarbon feed containing substantial amounts of materials boiling above 95° C. in a reaction zone with hydrogen and a catalyst under hydrocracking conditions, wherein said catalyst comprises a composite containing:

(A) a porous amorphous matrix selected from the group consisting of alumina-silica, alumina-silica-titania and alumina-silica-zirconia polygels, said polygel having an alumina-to-silica weight ratio in the range of from about 0.2–20 to 1, respectively;

(B) a hydrogenation component of (1) nickel or cobalt or any combination thereof in an amount, calculated as metal, in the range of from about 1 to 10 weight percent of said matrix, and (2) molybdenum or tungsten, or any combination thereof, in an amount, calculated as metal in the range of from about 5 to 25 weight percent of said matrix, said hydrogenation component being (1) in the form of metal or oxide or sulfide or any combination thereof and (2) dispersed through said matrix; and

(C) a finely divided intermediate pore size silicaceous crystalline molecular sieve component substantially in the ammonium or hydrogen form, said molecular sieve being (1) substantially free of such hydrogenation component, (2) dispersed through said matrix and (3) selected from the group consisting of (i) crystalline aluminosilicates of the ZSM series including crystalline admixtures of members of the ZSM series and (ii) essentially alumina-free silicates of the crystalline silica polymorph or chromia silicate or ferrosilicate families.

4,495,062

CATALYST AND SUPPORT, THEIR METHODS OF PREPARATION, AND PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 274,499, Jun. 17, 1981, Pat. No. 4,399,057. This application Apr. 15, 1983, Ser. No. 485,185

Int. Cl.³ C10G *47/12, 45/04, 45/08*

U.S. Cl. 208—111 **30 Claims**

1. A process for the conversion of a hydrocarbon stream containing asphaltenes and a substantial amount of metals, which process comprises contacting said stream under suitable

conditions with a catalyst comprising a hydrogenating component comprising at least one hydrogenating metal and a large-pore, high-surface area support comprising two or more inorganic oxides, said at least one hydrogenating metal being present in the elemental form, as the oxide, as the sulfide, or mixtures thereof, said catalyst having been prepared by forming a composite comprising said two or more inorganic oxides into a shaped catalyst support material having a selected shape and at least 0.8 cc/gm of its pore volume in pores having diameters of 0 nm (0 Å) to 120 nm (1,200 Å) and at least 0.1 cc/gm of its pore volume in pores having diameters of 120 nm (1,200 Å) to 5,000 nm (50,000 Å), heating said shaped catalyst support material in the presence of steam at sufficient elevated temperature, steam pressure, and time period to increase the average pore diameter of said shaped catalyst support material in the absence of any appreciable reduction in pore volume so as to provide a steam-treated support material, and subsequently impregnating said steam-treated support material with said at least one hydrogenating metal.

4,495,063

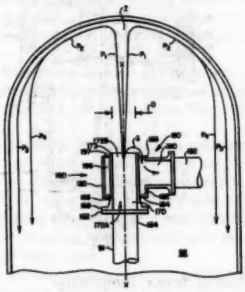
CARBOMETALLIC OIL CONVERSION WITH BALLISTIC SEPARATION

Paul W. Walters, Ashland; Roger M. Benslay, Catlettsburg, and Dwight F. Barger, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 263,394, May 13, 1981, Pat. No. 4,390,503. This application Nov. 1, 1982, Ser. No. 438,074

Int. Cl.³ C10G *11/18*

U.S. Cl. 208—113 **5 Claims**



1. A process for converting vaporized carbo-metallic oil to lighter product vapors comprising the steps of:

(A) contacting said oil with fluidized particulate solids in a vertical tubular riser cracking zone at cracking conditions to produce a suspension of said lighter products in said particulate solids,

(B) providing an annular shroud about the discharge end of the cracking zone, said shroud being open in the end adjacent to the discharge end of said cracking zone, but closed in the end opposite thereto, together with open end conduit means penetrating the outer wall of said shroud and extending radially therefrom,

(C) passing said suspension from said cracking zone into an enlarged disengagement zone under conditions providing substantially greater momentum to said solids than said product vapors and providing a pressure differential in the direction of flow of said vapors whereby rapid separation between solids and vapor is achieved,

(D) recovering product vapors thus separated from solids in said annular zone for recovery via said open end conduit means,

(E) and recovering said solid particulate material from said disengagement zone for regeneration and recycle to said riser cracking zone.

4,495,064

METAL PASSIVATION ADDITIVE EMPLOYED IN A CRACKING PROCESS

Ernest B. Boston, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 13, 1984, Ser. No. 599,840

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **16 Claims**

1. A process for cracking hydrocarbon feedstock which comprises contacting said hydrocarbon feedstock with an active hydrocarbon cracking catalyst under cracking conditions wherein said cracking catalyst has been modified with an amount of antimony hydroxyhydrocarbylthiolate sufficient to passivate contaminating metals.

4,495,065

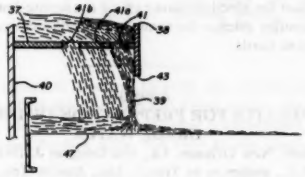
VIBRATORY SCREENING APPARATUS AND METHOD

Sharon M. B. DeReamer, Spring, and Dennis R. Eifling, Katy, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 472,820

Int. Cl.³ B01D *33/38*; B07B *1/00*

U.S. Cl. 209—243 **9 Claims**



1. A vibrating screen machine for separating particles from fluid in which a fine mesh screen is located within a vibratory basket, and means is provided for vibrating the basket, said machine further including:

supply means for delivering fluid having the entrained particles from a source thereof towards said screen;

weir means disposed substantially adjacent the supply means and overlying an upstream portion of said screen for directing the flow of fluid onto said screen, said weir means including an upstream end positioned directly adjacent said supply means and a downstream end positioned away therefrom;

dam means attached to the downstream end of said weir means for forming a pool of said fluid on said weir means, said weir means including at least one fluid flow opening positioned substantially adjacent said dam means; and

flow directing means connected to said weir means for directing the fluid flowing through said fluid flow opening towards the upsteam portion of said screen underlying said weir means.

4,495,066

CARD RETAINER AND CONTROL MEANS FOR INFORMATION RETRIEVAL DEVICES

Laurence A. Cross, Jr., Groveville, N.J., assignor to Microsize, Inc., Salt Lake City, Utah

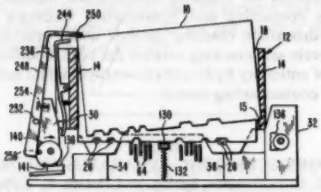
Continuation-in-part of Ser. No. 291,593, Aug. 10, 1981, Pat. No. 4,421,237. This application May 28, 1982, Ser. No. 382,862

Int. Cl.³ B07C *5/36*

U.S. Cl. 209—608 **5 Claims**

1. In a device for retrieving randomly filed cards, microfiche, microfiche jackets or the like, and including a support structure, a capsule removably insertable therein and holding a quantity of randomly filed cards, means for displacing wanted cards relative to unwanted ones preliminary to ejection of the wanted cards, and means for ejecting the wanted cards, the improvement comprising fulcrum means movable between a

retracted position, and an advanced position providing in said fulcrum means an element about which a wanted card must pivot when ejected, the capsule having means for engaging the pivoted card against return from its ejected position, the fulcrum means comprising an arm mounted on the support structrue for movement between the retracted and advanced positions thereof, said arm being pivotally mounted on the support structure, the arm being spring-biased to its retracted position,



the ejection means including cam means for biasing the arm to its advanced position against the restraint of said spring, the ejection means further including a spring-loaded ejector plate for snapping the wanted cards into engagement with said element of the fulcrum means, said cam means being adapted to first retract the ejection plate against the spring-loading thereof and thereafter release the same to exert its snap-action against the wanted cards.

4,495,067

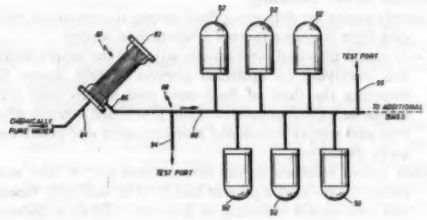
APPARATUS FOR PREPARATION OF INFUSION GRADE WATER

Elias Klein, New Orleans, La., and Douglas J. Beach, Burlington, N.C., assignors to Tracor, Inc., Austin, Tex.

Continuation of Ser. No. 212,142, Dec. 2, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 428,436

Int. Cl.³ B01D *31/00*

U.S. Cl. 210/87 **2 Claims**



2. A portable device for preparation of infusion grade water comprising:

a chemical purification assembly including:

an inlet port for receiving feed water,

a first filter for filtration of gross particles and organic impurities, said filter having an input port connected to said inlet port, and an output port for discharging filtered water,

means for reverse osmosis purification of said filtered water, said means having a retentate port for delivery of rejected water, said means generating permeate water, and wherein said means for reverse osmosis purification comprises membrane cartridges plumbed in parallel, connected to said first filter, each of said cartridges having a permeate port and a retentate port for delivering said water,

means for deionization of said permeate water connected to said means for reverse osmosis purification, and,

a second filter connected to said means for deionization, for fine particle filtration resulting in chemically pure water;

an endotoxin filter receiving assembly including;

an endotoxin filter having a means for receiving said chemically pure water, said endotoxin filter removing lipopolysaccharides of gram-negative bacteria from said chemically pure water and having a means for delivery of nonpyrogenic infusion grade water, and

collection means integrally sealed with said endotoxin filter for receiving and storing free of contamination said infusion grade water, said collection means constructed and arranged for preparation of solutions for direct patient infusion; and,

further including a recirculation system including a valve and conduit for delivering the retentate back to the means for reverse osmosis purification, said recirculation means including a needle valve in a rotameter for adjustment of the flow rate through each of the membrane cartridges.

4,495,068

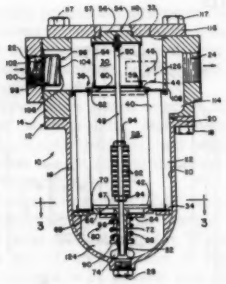
FLUID FILTERING DEVICE

Nils O. Rosaen, 5490 Waldon, Clarkston, Mich. 48016

Filed Oct. 29, 1979, Ser. No. 89,143

Int. Cl.³ B01D *27/10*

U.S. Cl. 210—91 **10 Claims**



1. A fluid filtering device comprising:

a housing having a filter chamber, said housing having a first fluid port open to a first end of the filter chamber and a second fluid port open to said filter chamber, said housing having an opening which is open to said first end of the filter chamber;

a filter assembly comprising a tubular filter element open at each end and a holder assembly for the filter element, said holder assembly comprising a closure member for engaging and closing one end of the filter element, an annular member for engaging the other end of the filter element and means for detachably connecting said closure member to said annular member so that the filter element is entrapped therebetween, a part of said detachable connection means forming a hand gripping portion for manipulating the filter assembly;

said filter assembly being insertable through the housing opening by said hand gripping portion so that said filter element is positioned within said filter chamber and so that the other end of the filter element is open to said first port, said filter element being spaced radially inwardly from said housing thus forming an annular chamber, said annular chamber being open to said second port;

means for sealing said other end of said filter element to said housing; and

means for closing the open end of said housing.

4,495,069

DRAIN SYSTEM FOR FUEL PROCESSOR APPARATUS

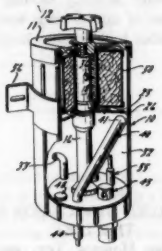
Leland L. Davis, Saline, Mich., assignor to Davco, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 287,149, Jul. 27, 1981, which is a continuation-in-part of Ser. No. 188,875, Sep. 19, 1980, Pat. No. 4,368,716, and a continuation-in-part of Ser. No. 435,681, Oct. 21, 1982, Pat. No. 4,421,090, which is a continuation of Ser. No. 188,875, Sep. 19, 1980, Pat. No. 4,368,716. This application Feb. 1, 1983, Ser. No. 463,041

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ F02M *31/00*; B01D *23/00*

U.S. Cl. 210—114 37 Claims



1. In a fuel processor means operative to separate out water or other impurities from the fuel, said fuel processor means including a chamber adapted to receive said fuel flowing therethrough, said fuel and said water or other impurities being separated in a lower portion of said chamber, the improvement comprising:

quantity sensing means located in said lower portion of said chamber for detecting the presence of at least one predetermined quantity of said water or other impurities therein;

drain means actuable to discharge a substantial portion of said water or other impurities from said chamber in response to the detection of said predetermined quantity of said water or other impurities by said quantity sensing means, whereby the quantity of said water or other impurities in said chamber is maintained at or below said predetermined quantity; and

temperature sensing means located in said lower portion of said chamber for sensing the temperature of said water or other impurities in said lower portion of said chamber and for disabling said drain means in response to detection of a water temperature below a predetermined temperature level.

4,495,070

HORIZONTAL VACUUM BELT FILTER

Henri G. W. Pierson, Greenwood, Bozeat, Northamptonshire, England

Continuation-in-part of Ser. No. 317,298, Nov. 2, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,586

Claims priority, application United Kingdom, Jan. 10, 1981, 8100710

Int. Cl.³ B01D *33/32*

U.S. Cl. 210—139 1 Claim

1. A filter belt assembly comprising in combination:

a filter belt disposed in an endless configuration defining a substantially horizontal upper run and a return lower run strategically entrained over a system of frame-mounted rollers, a slurry supply means for charging a slurry onto the top side of the upper run,

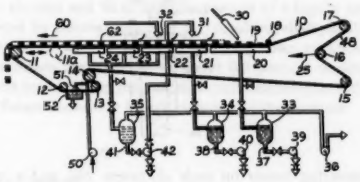
a wash liquor supply means for feeding a wash liquor onto the top side of the upper run,

a recirculated wash liquor supply means for feeding a recirculated wash liquor onto the top side of the upper run,

a vacuum means disposed beneath the upper run for drawing the liquid content from the slurry and wash liquors through the belt with the remaining solid content of the slurry being deposited in cake form upon the top side of the upper run,

a drive means for effecting incremental forward movement of the upper run relative to the vacuum means,

a variable valved control means operative upon commencement of each increment of forward movement of the upper run for allowing slurry charging during a first pre-set time period of the forward movement and for preventing slurry charging at all other times and also for allowing wash liquor charging during a second pre-set time period of the forward movement and for preventing wash liquor charging at all other times in the obtainment of a thin and even spread of the slurry on the upper run



and an adequate washing thereof, the control means including a first pipeline loop and a first pump operative for causing slurry to flow therearound continuously,

a first branch leading from the loop to the slurry supply means,

a first valve means disposed in the first branch,

a first timer for causing the valve to be opened only for the first pre-set time period,

a second pipeline loop and a second pump operative for causing wash liquor to flow therearound continuously,

a second branch leading from the loop to the wash liquor supply means, and

a second valve means disposed in the second branch, and

a second timer for causing the second valve to be opened only for the second pre-set time period.

4,495,071

HORIZONTAL PLATE FILTER WITH SELF-ALIGNING PLATES

John R. Schneider, 26 Cove Rd., Belvedere, Calif. 94920, and Joseph F. Mangione, San Rafael, Calif., assignors to John R. Schneider, Belvedere, Calif.

Filed Mar. 24, 1983, Ser. No. 478,313

Int. Cl.³ B01D *25/04*

U.S. Cl. 210—230 11 Claims

1. In a liquid filtering device a filtering section comprising:

a lower platen;

an upper platen;

a plurality of intermediate filter plates located between said platens;

means connecting said plates to each other with one of said plates being connected to said upper platen;

sealing means between adjacent plates;

means for moving said upper platen upwardly relative to said lower platen to separate said plates in oen operating mode to facilitate replacement of filter media between plates and for moving said upper platen downwardly in another operating mode to press said plates and said platens together and thereby seal chambers formed between adjacent plates for incoming liquid being filtered; and

alignment means on each of said plates cooperating with similar alignment means on each adjacent plate for maintaining the precise positioning of said plates relative to each other as the plates are brought together, each said

alignment means comprising a plurality of alignment pins for each said filter plate; means on each said filter plate for retaining said alignment pins;

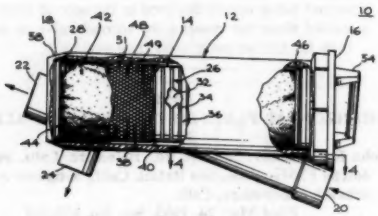
centering means on each alignment pin; and a receptacle means on each said filter plate for receiving said centering means of an alignment pin for an adjacent filter plate when the plates are moved together.

4,495,072

FILTER SCREEN DEVICE

Larry D. Fields, Mira Loma, Calif., assignor to Yardney Corporation, Pawcatuck, Conn.

Filed Feb. 25, 1983, Ser. No. 469,546
Int. Cl.³ B01D *27/12, 29/14, 29/38*
U.S. Cl. 210—238 **2 Claims**



1. An improved filter screen device, said device comprising, in combination:

a. an elongated tubular housing having a hollow central interior, an open upstream end communicating with said interior and an enclosed end wall at the opposite downstream end, an inlet disposed at an acute angle to the main axis of said housing, intersecting said interior between said upstream and downstream ends, converging with the tubular housing in the direction of the downstream end and configured to cause liquid passing therethrough into said housing to spiral over the outer face of said screen, a first outlet extending through said end wall at said downstream end about perpendicular to said first outlet;

b. a hollow elongated perforated tubular member releasably secured in said housing interior and having an open downstream end and a closed upstream end, the latter sealing said upstream end of said housing, said first outlet being in communication with the interior of said tubular member at the downstream end thereof, said tubular member having annular slots spaced longitudinally on the exterior thereof about perpendicular to the longitudinal axis thereof, and having a handle connected to the closed upstream end thereof and tabs which fit into slots in said upstream end of said housing, said tubular member being insertable into said housing and rotatable therein to lock to said housing by said tabs;

c. a flexible sock type filter screen releasably disposed over the outer surface of said tubular member and spaced inwardly of said housing to define therewith an annular space with which said second outlet is in communication;

d. an intermediate grid disposed between said screen and said tubular member to hold said screen away from said tubular member for improved filtration; and,

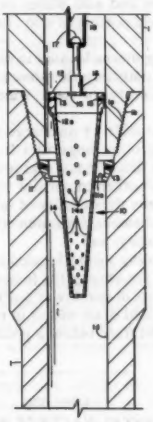
e. O-rings clamping said screen to said grid, said downstream end of said housing having converging walls against which one of said O-rings resiliently abuts when said tubular member locks in said housing.

4,495,073

RETRIEVABLE SCREEN DEVICE FOR DRILL PIPE AND THE LIKE

Herbert W. Beimgraben, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 21, 1983, Ser. No. 544,209
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—448 **7 Claims**

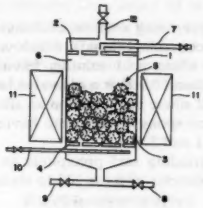


1. A retrievable screen for a well conduit defined by selectively connectable lengths of tubular members, comprising: a collar element constructed and arranged for mounting between any two of the selectively connectable ends of the tubular members; a screen element inserted in said collar and supported thereby in transverse relationship to the well conduit bore, said screen element having restricted apertures therethrough permitting flow of fluids but trapping all particles sized greater than said apertures; releasing means connecting said screen element to said collar, whereby the application of an applied axial force to said screen element effects the activation of said releasing means and the removal of said filter element; handle means rigidly secured to said screen element, said handle means terminating in a fishing neck, thereby permitting manual insertion of said screen element in the well conduit and downhole retrieval of said screen element by an overshot fishing tool.

4,495,074
METHOD AND APPARATUS FOR FILTRATION USING FERROMAGNETIC METAL FIBERS

Michiaki Hagiwara, Kyoto, and Yoshitaka Tomohiro, Uji, both of Japan, assignors to Unitika, Ltd., Hyogo, Japan

Filed Aug. 12, 1982, Ser. No. 407,317
Claims priority, application Japan, Aug. 20, 1981, 56-131046
Int. Cl.³ B01D 35/06
U.S. Cl. 210—695 12 Claims



1. A filtration method characterized in that a prefilt containing suspended solids is passed through a layer of filter medium in a magnetic field to remove the suspended solids from the prefilt, the filter medium layer comprising a collection of globular or ellipsoidal fiber lumps each formed by interlocking short organic fibers and having sho t corrosion-resistant amorphous ferromagnetic metal fibers adhered to the surface of the lump.

2. A filtration method characterized in that a prefilt containing suspended solids is passed through a layer of filter medium in a magnetic field to remove the suspended solids from the prefilt, the filter medium layer comprising a collection of globular or ellipsoidal fiber lumps each formed by interlocking short organic fibers and having short corrosion-resistant amorphous ferromagnetic metal fibers partially inserted into the lump so that the metal fibers project from the surface of the lump.

4,495,075
METHODS AND COMPOSITIONS FOR PREVENTING THE PRECIPITATION OF ZINC DIALKYLDITHIOPHOSPHATES WHICH CONTAIN HIGH PERCENTAGES OF A LOWER ALKYL GROUP

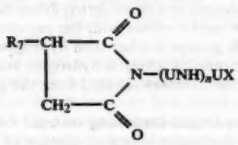
Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 15, 1984, Ser. No. 610,372
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 14 Claims

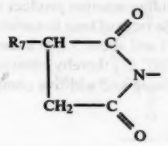
1. An anti-oxidant anti-corrosion zinc dialkyldithiophosphate composition which is stable to precipitation which comprises:

(a) a zinc dialkyldithiophosphate prepared from the reaction of phosphorus pentasulfide with a mixture of about 50 to 90 percent of a lower alcohol plus about 50 to 10 percent of a higher alcohol followed by neutralization of the resulting dialkyldithiophosphoric acid with a basically reacting zinc compound; and

(b) about 0.1 to 10.0 percent by weight to the zinc dialkyldithiophosphate of an oil-soluble alkenyl or alkyl mono- or bis-succinimide of the formula:

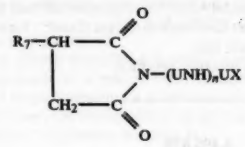


wherein X is amino or a group of the formula:

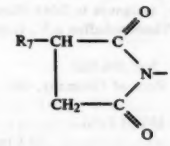


R_7 is an alkenyl or alkyl group containing from about 20 to 60 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6.

7. A method of preventing precipitation in a zinc dialkyldithiophosphate composition prepared from reacting phosphorus pentasulfide with a mixture of about 50 to 90 mole percent of a lower alcohol and 50 to 10 mole percent of a higher alcohol followed by neutralization of the resulting dialkyldithiophosphoric acid with a basically reacting zinc compound which comprises the addition of about 0.5 percent to about 10.0 percent by weight to the zinc dialkyldithiophosphate of an alkyl or alkenyl mono- or bis-succinimide of the formula:



wherein X is amino or a group of the formula:



R_7 is an alkenyl or alkyl group containing from about 20 to 60 carbon atoms; U is alkylene containing 2 to 6 carbon atoms; and n is an integer of from 0 to 6.

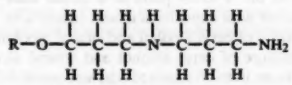
4,495,076
LUBRICATING OIL COMPOSITION CONTAINING REACTION PRODUCT OF TETRAHYDROPYRIMIDINES

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,563
Int. Cl.³ C01M 1/54
U.S. Cl. 232—38 11 Claims

1. A composition containing a major portion of a lubricating oil or grease and between about 0.5 and about 15% by weight of an additive prepared by:

(a) reacting a diamine or mixture of diamines generally having the structural formula



wherein R is 1 to 70 carbon atoms in length, with a long chain monocarboxylic or dicarboxylic acid, in a mole ratio of diamine to acid between about 1:1 and about 1:2 at a

temperature of about 100° to about 300° C. thereby obtaining a tetrahydropyrimidine reaction product; and

(b) reacting the tetrahydropyrimidine reaction product of (a) with an inorganic base in a mole ratio of base to carboxylic acid of (a) of between about 1:1 and about 5:1, at a temperature of about 175° to about 350° C., thereby obtaining a second reaction mixture containing said additive composition.

4,495,077

PROCESS FOR PREPARATION OF AMIDES OF UNSATURATED CYCLIC KETO ACIDS

Justin C. Powell, Fairfax, Va., and Stephen A. Levine, Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,730

Int. Cl.³ C10M *1/28, 1/36*

U.S. Cl. 252—51.5 A **18 Claims**

1. An amide of a cyclized keto acid prepared by the reaction of (i) an amine containing a first amino group and at least one other group which is an amino group or a hydroxyl group and (ii) a cyclized unsaturated keto acid prepared by the cyclizing of an alken-2-yl dicarboxlic acid anhydride with Lewis acid catalyst in anhydrous Friedel-Craft solvent, wherein said alkenyl group contains at least four carbon atoms thereby forming an amide reaction product; and

recovering said amide reaction product.

4,495,078

SOLID PROTON CONDUCTORS AND THEIR USE

Michael Bell, Kingston, Canada; Klaus-Dieter Kreuer, Böblingen; Albrecht Rabenau, and Werner Weppner, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,953

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127821

Int. Cl.³ H01G *9/00;* H01B *1/06*

U.S. Cl. 252—62.2 **12 Claims**

1. A solid proton conductor comprising zeolites having proton-containing cations and having six-membered rings and/or larger rings as secondary structural groups of the zeolithic structure, and having in the crystal lattice passages of said zeolites, a phase which promotes proton transport and wherein the zeolite is a zeolite of the analcime group, the chabazite group, the phillipsite group and/or the faujasite group.

4,495,079

FACIAL SKIN CLEANSER CAPABLE OF SOFTENING AND REMOVING SEBUM PLAQUE

Allen H. Good, 149 Kent Place Blvd., Summit, N.J. 07901

Filed Apr. 21, 1983, Ser. No. 487,306

Int. Cl.³ C11D *3/48, 3/46*

U.S. Cl. 252—106 **10 Claims**

1. A facial skin cleanser capable of softening and removing sebum plaque which comprises a thickened mixture of from 6 to 20 parts mineral oil, 4 to 19 parts of a mixed ester of a C_{12}–C_{18} fatty alcohol with caprylic acid and capric acid, 0.02 to 3 parts of a mixture of cetyl alcohol and stearyl alcohol, 0.2 to 3 parts of a mixture of cetyl alcohol and stearyl alcohol ethoxylated with from 10 to 30 moles of ethylene oxide, 0.02 to 1 part of sodium lauryl sulfate, per 100 parts by weight of the composition, and sufficient alkali to raise the pH of the composition to from 5.5 to 7.5, the balance comprising an aqueous solvent system.

4,495,080

METHOD FOR PREPARING A CATION EXCHANGER

Léon Petit, Wavre, and Serge R. De La Roche, Alsemberg, both of Belgium, assignors to Société internationale de Pulicité et d'Agences commerciales, enabrégé: "Sipac", Belgium

Continuation of Ser. No. 223,901, Jan. 9, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,014

Claims priority, application Luxembourg, Jan. 16, 1980, 82089

Int. Cl.³ C02F *5/02;* C02B *1/44*

U.S. Cl. 252—179 **26 Claims**

1. A method of preparing a cation exchanger for removing metals from metal-containing liquids, which comprises:

(a) preparing a silicic acid solution having a molecular weight lower than 50,000 at a pH valve between 1 and 3;

(b) adding to said silicic acid solution an amount of cement to form a micro-spongy precipitate having a CaO/SiO_2 ratio between 1 and 3.5; and

(c) drying and grinding said precipitate to form particles with a mean diameter of from 100 to about 600 microns.

4,495,081

COMPOSITIONS CONTAINING POLYETHER POLYOLS AND ALIPHATIC PRIMARY AMINES

James A. Vanderhider, Lake Jackson, and Gerald M. Lancaster, Surfside, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 397,714, Jul. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 321,348, Nov. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 231,066, Feb. 3, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,697

Int. Cl.³ C08G *18/06, 18/14;* C09K *3/00*

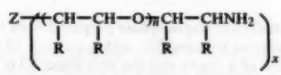
U.S. Cl. 252—182 **11 Claims**

1. A composition consisting essentially of a mixture of

(I) a polyol or a polyol mixture which polyol(s) is(are) free of active amine hydrogen atoms and which polyol or polyol mixture has an average hydroxyl functionality of at least 2 and an average hydroxyl equivalent weight of from about 500 to about 5000 and

(II) as a chain extender composition a mixture comprising

(A) at least one aliphatic amine-containing material having at least one primary amine group or a mixture of such materials, which material or mixture of materials has an average aliphatic amine hydrogen functionality of from about 2 to about 16 and an average aliphatic amine hydrogen equivalent weight of from about 15 to about 500 selected from the group consisting of alkylenediamines, polyalkylenepolyamines, cycloaliphatic amines, heterocyclic aliphatic amines and aminated polyoxyalkylene compounds which are represented by the general formula



wherein Z is the residue resulting from the removal of two or more hydrogen atoms from an initiator compound having a plurality of OH, NH or NH_2 groups or a combination of such groups; x has a value of from 2 to about 16; n has a value sufficient to provide the compound with the desired equivalent weight; and each R is independently hydrogen or a hydrocarbyl group having from 1 to about 4 carbon atoms with the proviso that when one of the R groups is other than hydrogen or a methyl group, the other R group is hydrogen; and

(B) one or more of the members selected from the group consisting of

(1) at least one hydrogen-containing material free of aliphatic amine hydrogen atoms or mixture of such materials, which material or material mixture has an

average OH functionality of from about 2 to about 4; and an average OH equivalent weight of from about 30 to about 120; and

(2) at least one aromatic amine-containing compound which is essentially free of aliphatic amine hydrogens and which contains at least 2 aromatic amine hydrogen atoms or mixture of such materials; and

wherein

(a) components (I) and (II-A) are present in quantities such that component (I) provides from about 60 to about 98 percent by weight of the composition based upon the combined weight of components (I) and (II-A) and

(b) component (II-B) is present in a quantity of from about 5 to about 60 percent by weight of the combined quantities of (I), (II-A) and (II-B).

4,495,082

WATER-ABSORBENT

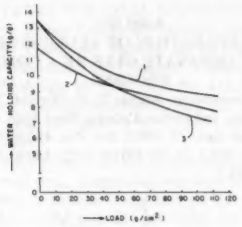
Akio Mita, Tokyo, and Susumu Kashiwabara, Hino, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,348

Claims priority, application Japan, Apr. 4, 1979, 54-40169

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—194 **7 Claims**



1. A water-absorbent which comprises a mixture of a pulp A manufactured by a pulping treatment of bagasse containing at least 5% by weight of pith and having a lignin content of 5–25% by weight and a pulp B having a lignin content of not greater than 5% by weight, wherein the ratio by weight of pulp A to pulp B (A/B) is within the range of from 95/5 to 20/80.

4,495,083

GUEST-HOST TYPE LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME

Shuji Imazeki; Akio Mukoh; Hirosada Morishita, all of Hitachi; Seiichi Imahori, Kawasaki; Masaharu Kaneko, Yamato, and Hitoshi Ono, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Mitsubishi Chemical Industries, Limited, both of Tokyo, Japan

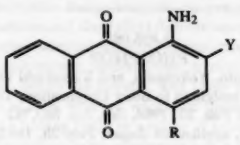
Filed Oct. 10, 1980, Ser. No. 195,860

Claims priority, application Japan, Oct. 12, 1979, 54-130785; Jan. 8, 1980, 55-712; May 28, 1980, 55-70152; Aug. 21, 1980, 55-114937; Sep. 8, 1980, 55-123571

Int. Cl.³ C09K *3/34*; C02F *1/13*

U.S. Cl. 252—299.1 **17 Claims**

1. In a liquid crystal composition comprising at least one host liquid crystal and at least one pleochroic dye dissolved as a guest in said at least one host liquid crystal, said host liquid crystal being a nematic liquid crystal, wherein said at least one pleochroic dye includes at least one anthraquinone dye represented by the formula:



(I)

wherein R is OH or NH_2, provided that (a) when R is OH, Y is selected from the group consisting of COXR′ in which X is an oxygen atom, and R′ is a cycloalkyl group or an aryl group each having one or more substituents, and (b) when R is NH_2, Y is COXR′ in which X and R′ are as defined above, and wherein said substituents have 1 to 18 carbon atoms when R is OH, and 1 to 24 carbon atoms when R is NH_2.

4,495,084

PLASTIC SCINTILLATOR

Tohru Shimizu, Noda, and Junji Nakagawa, Ichikawa, both of Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

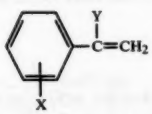
Filed Aug. 16, 1982, Ser. No. 408,452

Claims priority, application Japan, Aug. 17, 1981, 56-127750

Int. Cl.³ G01T *1/20*

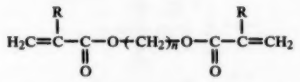
U.S. Cl. 252—301.17 **19 Claims**

1. A plastic scintillator in which a scintillating substance is incorporated in a matrix resin comprising a copolymer obtained by polymerizing a polymerizable mixture comprising at least 40 percent by weight of (a) at least one compound represented by the general formula I:



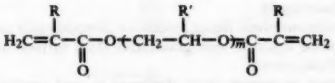
(I)

wherein, X and Y independently denote hydrogen atom or methyl group providing they do not exclusively denote methyl group, and a crosslinking amount of (b) at least one copolymerizable monomer possessed of two carbon-carbon double bonds capable of radical polymerization in the molecular unit thereof selected from the group consisting of compounds represented by the general formula II:



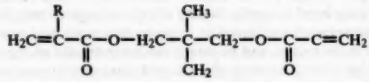
(II)

wherein, R denotes hydrogen atom or methyl group and n an integer of the value of 3 to 8; compounds represented by the general formula III:



(III)

wherein, R and R′ independently denote hydrogen atom or methyl group and m an intrger of the value of 1 to 23; and compounds represented by the general formula IV:



(IV)

wherein, R denotes hydrogen atom or methyl group.

4,495,085

PHOSPHOR

Shunichi Hashimoto, Yokohama, and Katsutoshi Ohno, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,782
Claims priority, application Japan, Feb. 28, 1983, 58-31963
Int. Cl.³ C09K *11/46*
U.S. Cl. 252—301.4 F **9 Claims**

1. A phosphor comprising:
a host material of calcium silicate having the formula:

$$CaO.xSiO_2$$

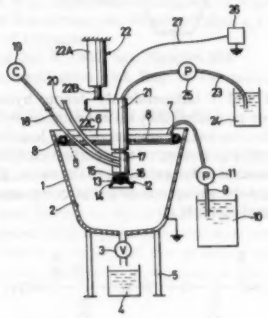
where x is in the range of 0.5 to 1, and
an activator of dysprosium in an amount of 0.05 to 10 mol % relative to one mol of said host material, said phosphor emitting essentially white light under excitation by an electron beam source and having a long decay time during which it emits essentially white light after the excitation source is removed.

4,495,086

METHOD AND APPARATUS FOR PREPARING EMULSIONS

Koichi Hiroshima, Kawasaki, and Yoshinori Tada, Chigasaki, both of Japan, assignors to Ransburg Japan, Limited, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,441
Claims priority, application Japan, Aug. 19, 1981, 56-129606; Jan. 13, 1982, 57-3894
Int. Cl.³ B01F *13/08*; B01J *13/00*; B05B *5/04*
U.S. Cl. 252—314 **20 Claims**



1. An apparatus for producing emulsions by spraying particles of a disperse phase liquid into a continuous phase liquid, said apparatus comprising in combination:
(a) an emulsifying vessel interiorly providing a gravitiative flow surface for forming thereon a stream of said continuous phase liquid;
(b) a continuous phase liquid feeder for directing said continuous phase liquid to said gravitative flow surface of said emulsifying vessel;
(c) a rotary atomizing head disposed in said emulsifying vessel in communication with a disperse phase liquid supply;
(d) a rotational drive means for rotatably driving said rotary atomizing head within said emulsifying vessel;
(e) a high voltage power supply connected to said rotary atomizing head to apply thereto a high voltage to atomize said disperse phase liquid in cooperation with said rotational drive means and to direct electrostatically charged particles of said disperse phase liquid toward said gravitative flow surface of said emulsifying vessel along lines of electric force formed between said rotary atomizing head and said emulsifying vessel, thereby continuously dispersing the atomized particles of said disperse phase liquid in said stream of said continuous phase liquid; and
(f) a receptacle located beneath said gravitative flow surface of said emulsifying vessel for collecting the resulting dispersion.

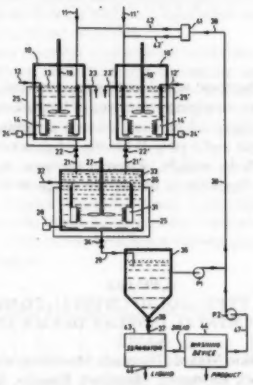
19. A method for producing an emulsion by spraying particles of a disperse phase liquid into a continuous phase liquid, said method comprising the steps of:
(a) feeding said continuous phase liquid to a gravitative flow surface on the inner periphery of an emulsifying vessel and allowing said continuous phase liquid to flow therealong due to the force of gravity in the form of a thin filmy stream;
(b) feeding said disperse phase liquid to a rotary atomizing head;
(c) rotating said rotary atomizing head in said emulsifying vessel while applying a predetermined high voltage to said rotary atomizing head to thereby atomize said disperse phase liquid to form a spray of disperse phase particles of a desired size; and
(d) directing said spray of disperse phase particles to impact on said filmy stream of said continuous phase liquid on the gravitative flow surface on the inner periphery of said emulsifying vessel to thereby disperse said disperse phase particles in said continuous phase liquid.

4,495,087

PREPARATION OF ALUMINUM HYDROXYCARBONATE GELS BY A CONTINUOUS PROCESS

Tai-Wing Ng, Downsview; Arthur P. G. Wright, Toronto; Eric Blaser, Toronto, and Suhas Ambike, West Hill, all of Canada

Filed Dec. 27, 1982, Ser. No. 452,997
Int. Cl.³ B01J *13/00*; C01F *7/02*; A61K *33/08*
U.S. Cl. 252—315.7 **27 Claims**



1. Process for the production of aluminum hydroxycarbonate gel comprising reacting an aqueous solution of an aluminum salt with an aqueous alkaline solution containing carbonate and bicarbonate anion and that undergoes reaction with the aluminum salt to precipitate therefrom an aluminum hydroxycarbonate gel, said process comprising continuously introducing the reactant solutions into an initial reactor vessel wherein the gel-forming reaction takes place, the reaction mixture being vigorously agitated so as to maintain the reactants and the gel precipitate formed therefrom substantially homogeneously distributed through the vessel and wherein the reaction mixture in the initial reactor vessel is maintained at a pH from about 6.5 to about 7.0, by controlled addition of an aqueous solution of an aluminum salt, continuously withdrawing

from the initial reactor vessel an output stream of the reaction mixture containing aluminum hydroxycarbonate gel, passing the reaction mixture to a subsequent reaction vessel wherein the reaction mixture is maintained at a lower pH of about 6.4 to about 6.8, and permitting the gel-forming reaction to proceed in the said subsequent vessel.

4,495,088

METHOD FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES

Thomas V. Liston, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 279,499, Jul. 1, 1981, abandoned. This application Feb. 24, 1983, Ser. No. 469,499
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.³ C10M *1/48, 1/54*
U.S. Cl. 252—32.7 E **12 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and an effective amount to reduce friction of a borated fatty acid ester of glycerol or mixtures thereof and an effective amount of an alkenyl succinimide to stabilize the borated fatty acid ester of glycerol against hydrolysis.

4,495,089

CONTINUOUS PROCESS FOR THE PRODUCTION OF SOLVENTS FOR COAL LIQUEFACTION

Hiroyuki Ihara; Kazuo Takahashi; Michiro Matsubara; Fumio Kumata, and Yoshitomo Sanami, all of Kanagawa, Japan, assignors to Mitsubishi Oil Company, Limited, Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,763
Claims priority, application Japan, Sep. 12, 1981, 56-143183
Int. Cl.³ B01F *1/00*; C10G *1/08*
U.S. Cl. 252—364 **10 Claims**

1. A continuous process for the production of a solvent used in liquefaction of coal, comprising the steps of:

hydrogenating a mixture comprised of 100 parts by weight of a hydrocarbon mixture and from 0.2 to 10 parts by weight of phenol and/or alkylphenol in which the alkyl group contains from 1 to 3 carbon atoms, the alkylphenol being at least one member selected from the group consisting of cresols, xylenols, methylethylphenols, and propylphenols which have a boiling point of from 180° to 250° C., the hydrocarbon mixture containing at least 50% by weight of a polycyclic aromatic hydrocarbon and its alkyl derivative, the polycyclic aromatic hydrocarbon and its alkyl derivative being tricyclic to pentacyclic aromatic hydrocarbons and their alkyl derivatives and being at least one member selected from the group consisting of phenanthrene, anthracene, fluoranthene, pyrene, chrysene, cholanthrene, benzo (a) phrene, and their alkyl derivatives, wherein at least 80% by weight of the hydrocarbon mixture has a boiling point in a range of from 320° to 550° C.,

the hydrogenation being carried out in a high temperature and pressure atmosphere in the presence of a catalyst containing a sulfide selected from the group VIII metal sulfides and group IV metal sulfides of the Periodic Table to obtain a partially hydrogenated product having a partial hydrogenation rate of less than 50% from partial hydrogenation of an aromatic ring of the polycyclic aromatic hydrocarbon or its alkyl derivative.

10. A continuous process for the production of a solvent used in liquefaction of coal, comprising the steps of:

hydrogenating a mixture comprised of 100 parts by weight of a hydrocarbon mixture and from 0.2 to 10 parts by weight of phenol and/or alkylphenol in which the alkyl group contains from 1 to 3 carbon atoms, the alkylphenol being at least one member selected from the group consisting of cresols, xylenols, methylethylphenols, and propylphenols which have a boiling point of from 180° to 250° C., the hydrocarbon mixture containing at least 50% by weight of a polycyclic aromatic hydrocarbon and its alkyl derivative, the polycyclic aromatic hydrocarbon and its alkyl derivative being tricyclic to pentacyclic aromatic hydrocarbons and their alkyl derivatives and being at least one member selected from the group consisting of phenanthrene, anthracene, fluoranthene, pyrene, chrysene, cholanthrene, benzo (a) phrene, and their alkyl derivatives, wherein at least 80% by weight of the hydrocarbon mixture has a boiling point in a range of from 320° to 550° C.,

the hydrogenation being carried out in a high temperature and pressure atmosphere in the presence of a catalyst containing a sulfide selected from the group VII metal sulfides and group IV metal sulfides of the Periodic Table to obtain a partially hydrogenated product having a partial hydrogenation of an aromatic ring of the polycyclic aromatic hydrocarbon or its alkyl derivative,

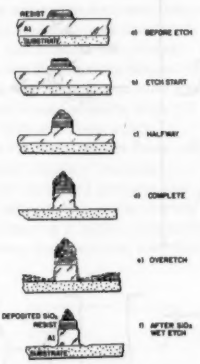
the catalyst containing the sulfide is selected from the group consisting of nickel-molybdenum sulfide catalyst and cobalt-molybdenum sulfide catalyst and wherein the hydrogenation in a high temperature and pressure hydrogen atmosphere is performed at a temperature of from 280° to 360° C., a pressure of from 50 to 200 kg/cm² (gauge pressure), a hydrogen/feed ratio of from 300 to 3,000 vol/vol, and a liquid space velocity per hour of volume of feed oil passing per volume of the catalyst of from 0.5 to 2.0 vol/-vol.

4,495,090

GAS MIXTURES FOR ALUMINUM ETCHING

Christopher M. Horwitz, Summer Hill, Australia, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 454,946, Jan. 3, 1983, Pat. No. 4,462,882. This application Sep. 12, 1983, Ser. No. 531,515
Int. Cl.³ C23K *15/00*
U.S. Cl. 252—372 **6 Claims**



1. An etch gas mixture for selectively etching aluminum in preference to a masking material on said aluminum, the mixture comprising an etch gas, a source of gaseous silicon, a source of gaseous hydrogen and a source of gaseous oxygen, which when introduced into a plasma etching chamber serves to deposit silicon dioxide selectively on the masking material while the unmasked aluminum is etched.

4,495,091

PROCESSES FOR PREPARING METHYL SUBSTITUTED-2-OXOHEXANE MIXTURES

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

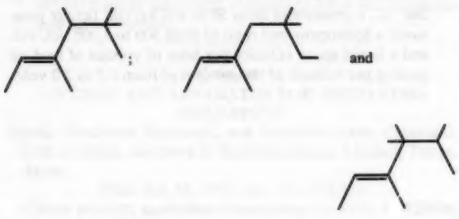
Division of Ser. No. 345,666, Feb. 8, 1982, Pat. No. 4,420,423, which is a continuation-in-part of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application May 24, 1983, Ser. No. 497,598

Int. Cl.[3] A61K *7/46*

U.S. Cl. 252—522 R 4 Claims

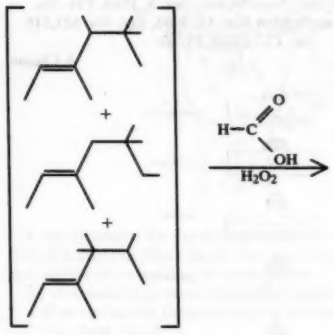
1. A process comprising the steps of:

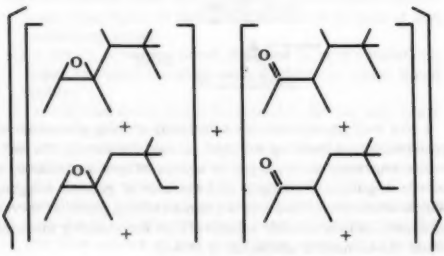
(i) dimerizing two moles of isoamylene in the presence of an acidic atalyst to form diisoamylene which is a mixture of molecules having the structures:



having a distillation range of 36°–40° C., vapor teperature; 74°–94° C. liquid temperature and 4–5 mm/Hg pressure;

(ii) intimately admixing the resulting diisoamylene mixture with concentrated hydrogen peroxide and formic acid whereby a mixture of alcohols, epoxides and ketones is formed according to the reaction:





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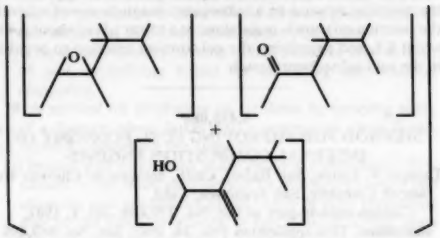
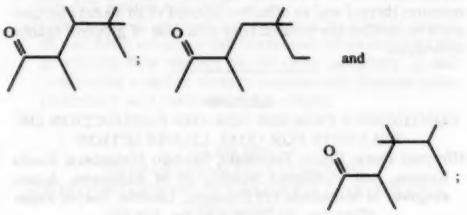
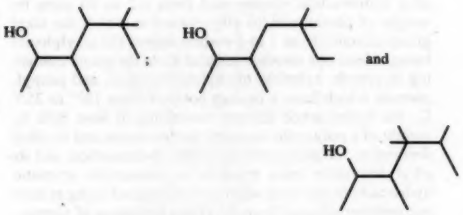


(iii) distilling the resulting reaction product at a temperature in the range of 93°–100° C. vapor temperature; 109°–120° C. liquid temperature at 50 mm/Hg pressure in order to isolate a mixture of compounds having the structure:



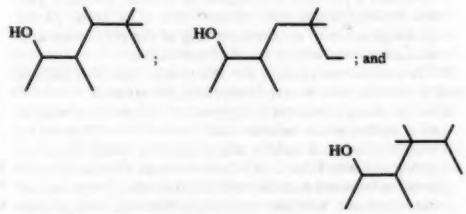
and

(iv) intimately admixing the resulting mixture with an alkali metal borohydride whereby a mixture of compounds is formed having the structures:

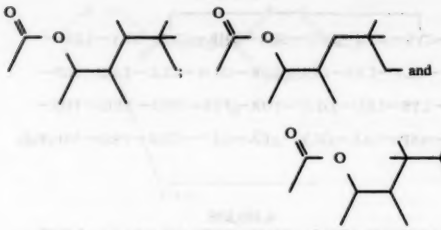


distilling at a vapor temperature in the range of 90°–93° C.; a liquid temperature in the range of 97°–108° C. and a pressure of 14 mm/Hg.

2. The process of claim 1 comprising the additional step of intimately admixing the mixture of compounds having the structures:



with acetic anhydride whereby a mixture of compounds is formed having the structures:



distilling at a vapor temperature in the range of 88°–90° C.; a liquid temperature in the range of 97°–109° C. and a pressure of 8.5 mm/Hg.

3. The product produced by the process of claim 1.

4. The product prepared according to the process of claim 2.

4,495,092

VISCOSITY REGULATORS FOR HIGH-VISCOSITY SURFACTANT CONCENTRATES

Karl H. Schmid, Mettman; Hans J. Rommerskirchen, Duesseldorf-Eller; Herbert Reuter, Hilden; Wolfgang Seiter, Neuss, and Robert Piorr, Ratingen-Hoesel, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,433

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305430

Int. Cl.³ C11D *1/825*

U.S. Cl. 252—559 **21 Claims**

1. A process for the preparation of an aqueous concentrate of an α-sulfofatty acid ester comprising the steps of:

(a) Sulfonating a fatty acid ester in the α-position with an excess of gaseous SO_3 to produce an α-sulfofatty acid ester;

(b) removing most or all of the excess SO_3 from the α-sulfofatty acid ester;

(c) adding to the α-sulfofatty acid ester (i) a monohydric or polyhydric alcohol containing from 8 to 40 carbon atoms or (ii) a reaction product a monohydric or polyhydric alcohol containing from 8 to 40 carbon atoms of with from 1 to 20 moles of ethylene oxide, propylene oxide, or a mixture of ethylene oxide and propylene oxide, per mole of alcohol;

(d) neutralizing the α-sulfofatty acid ester with concentrated aqueous alkali metal hydroxide solution wherein said solution is at a concentration sufficient to produce an α-sulfofatty acid ester concentration of at least 50% by weight;

and wherein the alcohol in step (c) is added in quantity sufficient to produce a viscosity of the aqueous concentrate of less than 10,000 mPas at 70° C.

4,495,093

PROCESS FOR MAKING THIOBISCARBAMATES

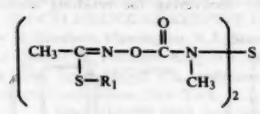
Wallace Y. Fu, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 15, 1982, Ser. No. 368,639

Int. Cl.³ C07C *103/12*

U.S. Cl. 260—453.3 **19 Claims**

1. An improved method for the preparation of a stable thiobiscarbamate compound of the formula:



Formula I

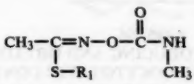
wherein R_1 is alkyl of from 1 to 4 carbon atoms, which method comprises the steps of:

(1) contacting at a temperature of from about 0° C. to about 35° C.

(a) a mixture of:

(i) a nitrogen-containing heterocyclic base, and

(ii) a carbamate of the formula:



Formula II

wherein R_1 is as previously defined, with

(b) a sulfur chloride of the group of SCl_2 and S_2Cl_2, to form a reaction slurry.

(2) cooling said slurry to a temperature of no greater than about 20° C.,

(3) quenching said slurry by the addition thereto of a C_1–C_3 alcohol at a temperature of no greater than 35° C.,

(4) separating said thiobiscarbamate from said slurry and purifying by one or more washings with methanol, and

(5) thereafter, recovering said thiobiscarbamate in high yield, and having a good thermal stability.

4,495,094

PROCESS FOR SEPARATING FATTY AND ROSIN ACIDS FROM UNSAPONIFIABLES

Michael T. Cleary, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 9, 1984, Ser. No. 598,121

Int. Cl.³ C09F *1/00, 5/10*

U.S. Cl. 260—97.6 **7 Claims**

1. A process for separating fatty and rosin acids from a feed mixture comprising said fatty and rosin acids and an unsaponifiable compound, said process comprising:

(a) introducing said feed mixture into an extraction zone, and therein contacting said mixture with a solvent comprising an alcohol and water solution which is selective for adsorbing said fatty and rosin acids;

(b) removing a raffinate stream from said extraction zone which contains a higher concentration of unsaponifiable compound than said feed mixture; and

(c) removing a solvent-rich extract stream from said extraction zone containing a higher concentration of said fatty and rosin acids, on a solvent free basis, than said feed mixture.

4,495,095

ACIDULATION AND RECOVERY OF CRUDE TALL OIL FROM TALL OIL SOAPS

Nelson E. Lawson, Trenton, and Gamal I. Amer, Lawrenceville, both of N.J., assignors to Union Camp Corporation, Wayne, N.J.

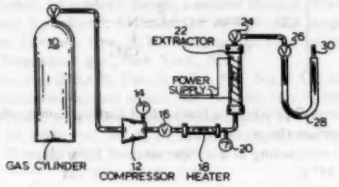
Filed Apr. 4, 1983, Ser. No. 481,811

Int. Cl.³ C09F *93/00;* **C11D** *15/00*

U.S. Cl. 260—97.7 **4 Claims**

1. A method for the preparation of crude tall oil which

comprises acidulating tall oil soaps with supercritical carbon dioxide and thereafter recovering the resulting acidulated



material from the fluid phase of the supercritical carbon dioxide.

4,495,096

PROCESS FOR PRODUCING AND OBTAINING ANAPHYLATOXIN-AND COCYTOTAXIN-CONTAINING LEUCOTAXINE PREPARATIONS AND OF ANAPHYLATOXIN AND COCYTOTAXIN PROTEINS IN MOLECULARLY HOMOGENEOUS, BIOLOGICALLY ACTIVE FORM

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft Zur Forderung der Wissenchaften, Gottingen, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 275,014

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022914

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **32 Claims**

1. In a process for producing and obtaining an anaphylatoxin- and cocytotaxin-containing leucotaxine preparation in biologically active form from contact-activated mammalian serum, the process including separating proteins from other serum constituents to obtain a serum protein concentrate fraction, separating a part of accompanying foreign blood proteins from anaphylatoxin and cocytotaxin present in said protein concentrate fraction, and isolating the leucotaxine preparation by chromatography on hydroxyapatite, wherein the improvement comprises separating prior to chromatography on hydroxyapatite, a major fraction of accompanying foreign blood constituents from said serum protein concentrate fraction by fractional elution and then filtering the residual protein precipitate containing anaphylatoxin and cocytotaxin by molecular sieve filtration.

4,495,097

DES-SERINE^2-GLYCINE^8 CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,979

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 T **4 Claims**

1. A peptide having the structure:

H—CYS—ASN—LEU—SER—THR—CYS—GLY—LEU—
—GLY—LYS—LEU—SER—GLN—GLU—LEU—HIS—
—LYS—LEU—GLN—THR—TYR—PRO—ARG—THR—
—ASN—THR—GLY—SER—GLY—
THR—PRO—NH_2(Salmon)

or

-continued

H—CYS—ASN—LEU—SER—THR—CYS—GLY—LEU—
—GLY—LYS—LEU—SER—GLN—GLU—LEU—HIS—
—LYS—LEU—GLN—THR—TYR—PRO—ARG—THR—
—ASP—VAL—GLY—ALA—GLY—THR—PRO—NH_2(Eel).

4,495,098

COORDINATION COMPLEXES OF POLYVALENT METAL IONS AND CYAN DYE-RELEASING COMPOUNDS COMPRISING A 6-HETEROCYCLAZO-3-PYRIDINOL

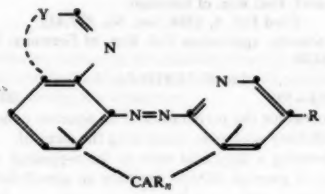
James A. Reczek, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,501, Jan. 17, 1983, Pat. No. 4,419,435, which is a continuation-in-part of Ser. No. 380,844, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,694

Int. Cl.³ C09B *45/14, 45/18, 45/20, 45/22*

U.S. Cl. 534—651 **9 Claims**

1. A coordination complex of a polyvalent metal ion and a nondiffusible compound capable of releasing at least one diffusible cyan dye moiety comprising a 6-heterocyclylazo-3-pyridinol, said compound having the formula:



wherein:

(a) Y represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) CAR represents a ballasted carrier moiety capable of releasing said diffusible cyan dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(c) R represents a hydroxy group, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(d) n is 0, 1 or 2, with the proviso that when n is 0, the R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,099

NON-DIFFUSIBLE MAGENTA COMPOUND CAPABLE OF RELEASING A 4-(2-HETEROCYCLAZO)PHENOL HAVING A HETEROCYCLIC RING FUSED THERETO

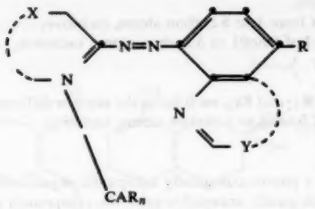
Steven Evans, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,499, Jan. 17, 1983, Pat. No. 4,420,550, which is a continuation-in-part of Ser. No. 380,843, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,692

Int. Cl.³ C09B *45/02, 45/12, 45/22, 45/32*

U.S. Cl. 534—651 **15 Claims**

1. A nondiffusible compound capable of releasing at least one diffusible magenta dye moiety, said compound having the formula:



wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered heterocyclic ring;

(b) Y represents the atoms necessary to complete a 5- or 6-membered heterocyclic fused ring;

(c) CAR represents a ballasted carrier moiety which will release said diffusible magenta dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(d) R represents hydroxy, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,100

NON-DIFFUSIBLE CYAN COMPOUND CAPABLE OF RELEASING A 6-HETEROCYCLYLAZO-3-PYRIDINOL

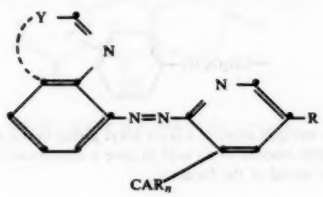
James A. Reczek, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,501, Jan. 17, 1983, Pat. No. 4,419,435, which is a continuation-in-part of Ser. No. 380,844, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,693

Int. Cl.³ C09B *29/22, 29/36, 45/00, 31/14*

U.S. Cl. 534—651 **15 Claims**

1. A nondiffusible compound capable of releasing at least one diffusible cyan dye moiety, said compound having the formula:



wherein:

(a) Y represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) CAR represents a ballasted carrier moeity which will release said diffusible cyan dye moiety as a function of development of a silver halide emulsion layer under alkaline conditions;

(c) R represents hydroxy, a salt thereof, or a hydrolyzable precursor thereof, or CAR which is linked to said dye moiety through an oxygen atom thereon; and

(d) n is 0, 1, or 2, with the proviso that when n is 0, then R is CAR which is linked to said dye moiety through an oxygen atom thereon.

4,495,101

ANTIINFLAMMATORY 5H-TETRAZOLO (5,1-C)(1,4)BENZODIAZEPINE DERIVATIVES

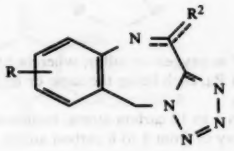
Dieter H. Klaubert, Flemington, N.J.; Stanley C. Bell, Narberth, Pa.; Thomas W. Pattison, King of Prussia, Pa., and Richard W. Rees, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,655

Int. Cl.³ C07D *210/00, 403/00*

U.S. Cl. 260—239.3 T **20 Claims**

1. A compound of the formula:

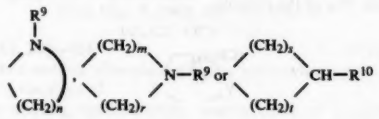


in which

R is hydrogen, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyl nitro or cyano; and

R^2 is =O, =S, H_2, $-SCH_3$, or $-NR^4R^5$

where R^4 and R^5 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms or dialkylaminoalkyl where each alkyl moiety has 1 to 6 carbon atoms, or R^4 and R^5 together form an alkylidene group of 4 to 6 carbon atoms, or, together with the nitrogen atom to which they are attached, they form the 4-morpholinyl moiety or a group of the formula:



wherein R^9 is alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms; aralkyl of 7 to 16 carbon atoms or alkoxyalkyl of 2 to 12 carbon atoms; R^{10} is alkylamino of 1 to 6 carbon atoms or piperidino; n is one of the integers 3, 4 or 5; m is one of the integers 1 or 2; r is one of the integers 2 or 3; s is an integer from 0 to 6; t is an integer from 0 to 6; with the proviso that the sum of s and t is 3 to 6; and with the proviso that when R is chloro in 8-position, R^2 must be other than oxygen or sulfur; or a pharmaceutically acceptable salt thereof.

4,495,102

AMINOALKYL STEROIDS

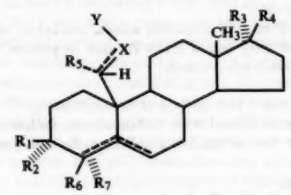
Leonard N. Nysted, Highland Park, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Sep. 3, 1982, Ser. No. 414,717

Int. Cl.³ C07J *43/00*

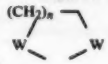
U.S. Cl. 260—239.5 **49 Claims**

1. A compound of the formula:



I

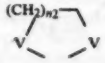
wherein R_1 and R_2, each being the same or different, are:
(a) hydrogen;
(b) benzyloxy;
(c) hydroxyl;
(d) alkanoyloxy as from one to six carbon atoms, inclusive;
(e) wherein R_1 and R_2 are taken together to form a keto group; or
(f) wherein R_1 and R_2 are taken together to form a heterocyclic ring of the formula:



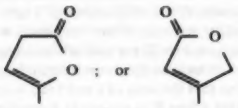
wherein W is oxygen or sulfur; wherein n_1 is 1 or 2.
wherein R_3 and R_4, each being the same or different are:
(a) hydrogen;
(b) alkyl from 1 to 10 carbon atoms, inclusive;
(c) alkanoyloxy of from 1 to 6 carbon atoms, inclusive;
(d) aralkoxy;
(e) hydroxy;
(f) wherein R_3 and R_4 are taken together to form:
(1) a keto group;

(2)

(g) wherein R_3 and R_4 are taken together to form a heterocyclic ring of the formula:



wherein V is oxygen or sulfur; wherein n_2 is 1 or 2;
(h) wherin one of R_3 or R_4 is of the formula:



with the proviso that the remaining R_3 or R_4 is hydrogen;
(i) $-COOR_8$; or
(J) carboxyalkyl, of from 2 to 5 carbon atoms, inclusive;
wherein R_8 is:
(a) hydrogen; or
(b) alkyl of from 1 to 6 carbon atoms, inclusive;
wherein R_5 is:
(a) hydrogen;
(b) hydroxyl; or
(c) trialkylsilyloxy; with the proviso that R_5 is present only when the carbon to which it is attached is saturated;
wherein R_6 and R_7, each being the same or different, are:
(a) hydrogen; or
(b) alkyl of from 1 to 6 carbon atoms, inclusive, with the proviso that only one of R_6 or R_7 may be present when a 4,5 ring double bond exists;
wherein X is:
(a) alkyl of from 1 to 6 carbon atoms, inclusive;
(b) alkylidene of from 1 to 6 carbon atoms, inclusive, with the proviso that when X is alkylidene, R_5 is not present;
wherein Y is:
(a) $-NR_9R_{10}$; or
(b) $-N^{(+)}R_{11}R_{12}R_{13}\ Z^{(-)}$;
wherein R_9 and R_{10}, each being the same or different, are:
(a) hydrogen;
(b) alkyl of from 1 to 6 carbon atoms, inclusive;
(c) alkanoyl of from 1 to 6 carbon atoms, inclusive;
(d) aryl; or
(e) aralkyl;
wherein R_{11}, R_{12} and R_{13}, each being the same or different are:
(a) alkyl of from 1 to 6 carbon atoms, inclusive;
(b) aryl; or
(c) aralkyl;
wherein Z is a pharmacologically acceptable negative ion; or the pharmacologically acceptable salts; the compounds of the invention being either hydrated or unhydrated.

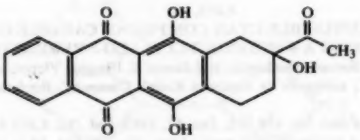
4,495,103

PREPARATION OF OPTICALLY ACTIVE 4-DEMETHOXYDAUNOMYCINONE

Shiro Terashima, Tokyo; Katsumi Tamoto, Funabashi, and Masamichi Sugimori, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

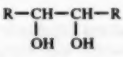
Filed Mar. 2, 1983, Ser. No. 471,338
Claims priority, application Japan, Jul. 30, 1982, 57-134106; Jul. 30, 1982, 57-134109
Int. Cl.[3] **C07C** *50/36, 167/02*
U.S. Cl. 260—351.1 **11 Claims**

1. A process for preparing optically active 4-demethoxy-7-deoxydaunomycinone which comprises reacting a racemate of the α-hydroxyketone of the formula:



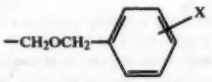
(I)

with an optical isomer of the α-glycol of the formula:

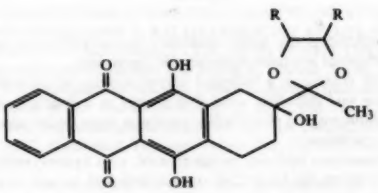


(II)

wherein R is a group of the formula:

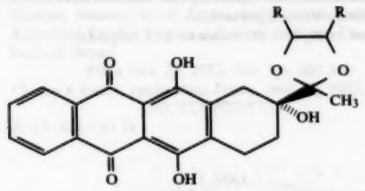


and X is a halogen atom of a layer alkyl group in the presence of a catalytic amount of an acid to give a diastereomeric mixture of the acetal of the formula:



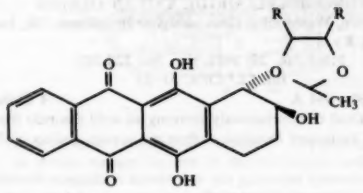
(III)

wherein two R groups take a trans configuration, separating the diastereomeric mixture into each of the diastereomers of the formulas:



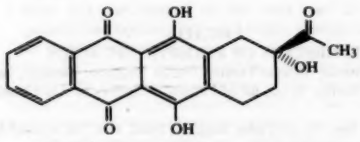
(III-A)

and



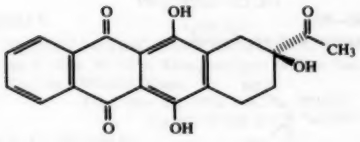
(III-B)

wherein R is as defined above and two R groups take a trans configuration by precipitation from a solvent to which said diastereomers show different solubilities and subjecting either one of the resultant diastereomer to deacetalization by treatment with an acid to give the corresponding optically active 4-demethoxy-7-deoxydaunomycinone of either one of the formulas:



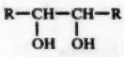
(IV-A)

and



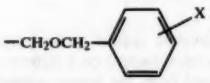
(IV-B)

4. An optically active α-glycol of the formula:



(II)

wherein R is a group of the formula:



and X is a halogen atom or a lower alkyl group.

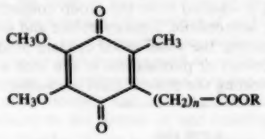
4,495,104

QUINONE CARBOXYLIC ACIDS AND ESTER DERIVATIVES

Isuke Imada, Izumi; Tetsuya Okutani, Takatsuki, and Masazumi Watanabe, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 11, 1980, Ser. No. 167,522
Claims priority, application Japan, Apr. 15, 1980, 55-49956
Int. Cl.³ C07C *66/00, 69/95*
U.S. Cl. 260—396 R **9 Claims**

1. A compound of the formula



wherein n is an integer of 10 to 21, inclusive, and R is hydrogen or alkyl having 1 to 4 carbon atoms.

4,495,105

PREPARATION OF HIGHER TIN CARBOXYLATES IN IMPROVED YIELDS USING AN INERT GAS

Richard F. Miller, Humble, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 9, 1983, Ser. No. 473,836
Int. Cl.³ C07F *7/22*
U.S. Cl. 260—414 **13 Claims**

1. In a method of producing higher carboxylates of tin comprising the steps of:

(a) reacting stannous oxide, stannic oxide or mixtures of these with an anhydride of a lower organic acid,

(b) reacting the product from (a) with at least one higher carboxylic acid to produce a tin carboxylate of said higher carboxylic acid, and

(c) recovering the tin carboxylate of said higher carboxylic acid,

the improvement comprising passing an inert gas through the reaction mixture during step (b).

4,495,106

ADSORBENT AND PROCESS FOR SEPARATING FATTY ACIDS FROM ROSIN ACIDS

Michael T. Cleary, Elmhurst, Ill., and William C. Laughlin, Edmond, Okla., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1982, Ser. No. 408,100
Int. Cl.³ C11C *1/08*
U.S. Cl. 260—419 **21 Claims**

1. A process for separating a fatty acid from a mixture comprising a fatty acid and a rosin acid, said process comprising contacting said mixture at separation conditions with a molecular sieve comprising silicalite in a silica matrix the precursor of said molecular sieve comprising silicalite powder dispersed in colloidal amorphous silica, said precursor having been gelled and then treated in a manner effecting substantially complete elimination of hydroxyl groups on said molecular sieve, to provide that said molecular sieve selectively retains said fatty acid thereon to the exclusion of said rosin acid which is removed from the fatty acid containing molecular sieve.

4,495,107
PROCESS FOR PRODUCING ALKALI METAL CYANATES

William B. Dodge, Princeton, and Marc Halfon, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 10, 1983, Ser. No. 474,216
Int. Cl.³ C01C 3/00
U.S. Cl. 260—453 P 3 Claims

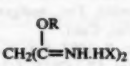
1. A process for making an alkyl isocyanate which comprises (1) first heating urea with a stoichiometric excess of alkali metal carbonate in the temperature range 130°–180° C. in a solvent which selectively dissolves the urea but not the alkali metal carbonate and is selected from the group consisting of 1,2-dichlorobenzene, benzonitrile, 2-phenylbutane and mesitylene and then (2) reacting the alkali metal cyanate produced thereby, without recovery or purification, in situ with a dialkylsulfate, thereby yielding the desired alkyl isocyanate.

4,495,108
PROCESS FOR PREPARING DIALKYL PROPANEDIIMIDATE DIHYDROHALIDES

Jeffrey S. Gramm, Wilmington; Edwin L. Mongan, Jr., Newark, both of Del., and Patrick J. Sheeran, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1983, Ser. No. 474,470
Int. Cl.³ C07C 41/01
U.S. Cl. 260—453.7 15 Claims

1. An improved process for preparing a dialkyl propanediimidate dihydrohalide of the formula:



where
R is alkyl of 1 to 3 carbon atoms, and
X is chlorine or bromine,
by reacting malononitrile, an alcohol ROH and anhydrous hydrogen halide HX, wherein the improvement comprises conducting the reaction under a pressure of about 2 to 150 psig in a halobenzene, haloalkylbenzene or alkylbenzene solvent having a boiling point in the range of about 100° to 200° C. at atmospheric pressure.

4,495,109
PRODUCTION OF UNSATURATED NITRILES USING CATALYSTS PROMOTED WITH VARIOUS METALS

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Warrensville Heights, and Arthur F. Miller, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 371,324, Apr. 23, 1982, abandoned, which is a continuation of Ser. No. 940,533, Sep. 8, 1978, abandoned, which is a continuation of Ser. No. 380,527, Jul. 19, 1973, abandoned. This application Aug. 5, 1983, Ser. No. 520,870
Int. Cl.³ C07C 120/14
U.S. Cl. 260—465.3 3 Claims

1. In a process for preparing acrylonitrile by contacting a mixture of propylene, molecular oxygen and ammonia at a temperature of about 300° C. to about 500° C. with a catalyst, the improvement comprising (1) contacting said mixture with said catalyst at a rate such that the WWH is 0.05 to 0.25 and (2) using as said catalyst an oxide complex of the formula:

$$Cr_aK_bNi_gCo_hFe_dBi_eP_iMo_{12}O_x$$

wherein
a is about 0.5,
b is about 0.1,
g is about 2.5,
h is about 4.5,
d is about 2 to about 3,
e is about 1,
i is 0 to about 0.5, and
x is a number sufficient to satisfy the valence requirements of the other elements present,
said catalyst being free of antimony and tungsten.

4,495,110
METHOD OF CONTINUOUSLY FORMING AN ACID FLUORIDE FROM CARBON MONOXIDE, ANHYDROUS HYDROGEN FLUORIDE AND AN OLEFIN

John E. Corn, Westerville, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 26, 1981, Ser. No. 228,305
Int. Cl.³ C07C 51/58
U.S. Cl. 260—544 A 4 Claims

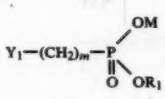
1. A method of continuously forming an acid fluoride from anhydrous hydrogen fluoride, carbon monoxide, and an olefin comprising
(a) continuously injecting the anhydrous hydrogen fluoride, carbon monoxide, and olefin into an area of high turbulence to form a reactant mixture;
(b) continuously transferring the reactant mixture from the area of high turbulence to a continuous reactor
wherein the temperature of the reactant mixture within said area of high turbulence is maintained at about 90° C. or less.

4,495,111
HEMIESTERS OF PHOSPHONIC ACIDS

Bernard Guerin, Bures/Yvette; Pierre Poisson, Bernay, and Georges Sturtz, Brest, all of France, assignors to Ato Chimie, France

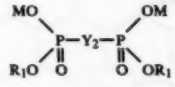
Division of Ser. No. 411,046, Aug. 24, 1982, Pat. No. 4,444,930. This application Sep. 26, 1983, Ser. No. 535,927
Claims priority, application France, Aug. 26, 1981, 81 16332
Int. Cl.³ C07F 9/40
U.S. Cl. 260—932 7 Claims

1. A hemiester with the formula



where Y_1 is a monovalent radical derived, by the loss of a nuclear hydrogen atom, from a compound selected from the group consisting of benzene, toluene, ethylbenzene, bromobenzene and cyclohexane, R_1 is a methyl or ethyl radical, m is 0 or 1 and M is potassium.

2. A hemiester with the formula

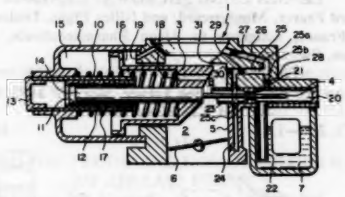


where Y_2 is a divalent radical derived, by the loss of two hydrogen atoms, each located on a different nucleus, from a compound selected from the group consisting of diphenyl, diphenyloxide, diphenylsulphone and diphenyl-2,2-propane, R_1 is a methyl or ethyl radical and M is potassium.

4,495,112
VARIABLE VENTURI-TYPE CARBURETOR

Takaaki Itou; Takashi Katou, both of Mishima, and Toshiharu Morino, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Oct. 27, 1982, Ser. No. 437,142
Claims priority, application Japan, Jun. 22, 1982, 57-106134
Int. Cl.³ F02M 9/06
U.S. Cl. 261—41 D 10 Claims

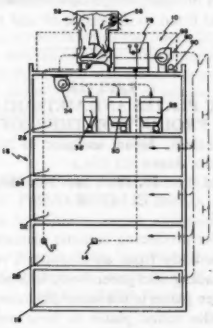


1. A variable venturi-type carburetor comprising:
an intake passage formed in the carburetor and having an inner wall;
a suction piston transversely movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said suction piston having a tip face which defines a venturi portion in said intake passage;
a throttle valve arranged in said intake passage at a position downstream of said suction piston;
a main fuel passage transversely extending to and opening into said intake passage;
a metering jet arranged in said main fuel passage;
a needle fixed onto the tip face of said suction piston and extending through said main fuel passage and said metering jet;
a slow fuel port formed on the inner wall of said intake passage and opening into said intake passage downstream of said throttle valve;
a slow fuel passage interconnecting said slow fuel port with said main fuel passage upstream of said metering jet;
a first fuel metering jet aranged in said slow fuel passage; and
a vacuum control jet connecting said venturi portion to said slow fuel passage between said slow fuel port and said first fuel metering jet.

4,495,113
ROTARY MIXING DAMPER METHOD AND MEANS

John E. Kice, Wichita, Kans., assignor to Kice Metal Products Co., Inc., Wichita, Kans.

Filed May 24, 1982, Ser. No. 381,557
Int. Cl.³ F24F 6/12
U.S. Cl. 261—64 R 2 Claims

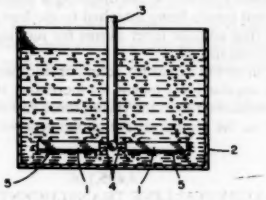


1. In an improved air stabilization system used in a building ventilation system which has an air propulsion means for delivering and/or intaking air through a plurality of openings in a housing having a damper assembly, wherein the improvement comprises a single mixing damper blade means rotatably positioned within the housing such as to regulate the air flow through the openings of the housing to allow either intake of ambient air to exhaust air from the building or to blend air from the building with outside air or to circulate only building air by completely closing off any intake of ambient air and exhaust of building air; said housing additionally includes at least one protrusion member secured to the inside thereof in order to define the limits of rotation of the single damper blade means within the housing; the openings of said housing comprises an ambient air intake opening, an ambient exhaust opening, a building air inlet opening, and an outlet opening; said housing comprises an outlet protrusion member attached to the top of said outlet opening and an inlet protrusion member secured in proximity to the bottom of said building air inlet opening; a spray chamber means in communication with said outlet opening of said housing, said spray chamber means comprises a sump means positioned within the bottom thereof, a spray bank means, and an eliminator means having a cross section defining a chevron; a fan means in communication with the spray chamber means for circulating air from the chamber means into the building; said damper blade means comprises a modified wedge having one end with a first axis of arcuate shape and another opposed end with a second axis and tapering to an edge, said first axis and said second axis having an angle with respect to each other of greater than about 90° but less than about 180°.

4,495,114
LEAF SPRING DIFFUSER WITH AMPLITUDE LIMIT

Walter C. Strauss, 718 E. Freistadt, Thiensville, Wis. 53092

Filed Jan. 17, 1984, Ser. No. 571,431
Int. Cl.³ B01F 3/04
U.S. Cl. 261—81 3 Claims

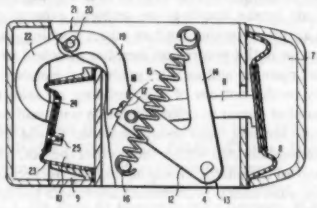


1. In an air diffuser for the treatment of sewage having a diffuser body defining an internal air chamber which is supplied by air through an air inlet and which delivers the air to a sewage tank through an air outlet port formed in the body, and from which port air flow is periodically modulated by a resilient vibrating leaf spring affixed to the exterior of the body, the improvement for limiting the amplitude of the outward deflection of the leaf spring into the sewage tank comprising a leaf-spring amplitude-limiting stop fixedly mounted on an extremity of the leaf spring subject to maximum deflection to move therewith with the stop being directed inwardly to pass through the port and into the internal air chamber, the stop having a cross-sectional area in a plane generally normal to its direction of motion substantially less than the area of the port opening so that the stop does not obstruct the flow of air out the port, and with the stop being formed with a portion located within the internal air chamber and engaging the diffuser body when the extremity of the leaf spring is deflected outwardly and away from the diffuser body to limit thereby the amplitude of leaf spring deflection.

4,495,115
DOWNDRAFT CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Roland Adam, Stuttgart; Dieter Krauth, Waiblingen-Hohenacker, and Hans-Otto Derndinger, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,664
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149277
Int. Cl.³ F02M *9/08*
U.S. Cl. 261—44 F **4 Claims**



1. A downdraft carburetor for internal combustiion engines, having

a choke tube,

a choke tube valve means, swivellable with a shaft and forming part of the choke tube wall, for controlling the magnitude of the cross-section of the choke tube,

a spring-loaded diaphragm means,

lever means for actuating the choke tube valve means in response to the spring loaded diaphragm means as a function of the control pressure in the choke tube

a jet needle means attached to the diaphragm means for engaging a jet carrier opposite the choke tube valve, and comprising

a first angular lever means rigidly connected to the shaft,

rod means attached to the diaphragm means, the free end of the rod means being attached to the free end of one leg of said first angular lever means for moving the choke tube valve means, and

a tension spring means for acting on another leg means of the first angular lever means for increasing the resulting closing moment due to the spring force and the effective lever arm on the closing of the choke tube valve.

4,495,116
POLYCRYSTALLINE TRANSLUCENT ALUMINA SINTERED BODY, A METHOD FOR PRODUCING THE SAME AND A HIGH PRESSURE VAPOR DISCHARGE LAMP OBTAINED BY USING SAID SINTERED BODY

Masayuki Kaneno, Tokoname, and Takehiro Kajihara, Komaki, both of Japan, assignors to NGK Insulators, Ltd., Japan

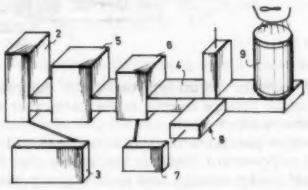
Division of Ser. No. 260,758, May 5, 1981, Pat. No. 4,373,030.
This application Oct. 19, 1982, Ser. No. 435,226
Claims priority, application Japan, May 15, 1980, 55-63312
Int. Cl.³ C04B *35/10*
U.S. Cl. 264—1.2 **4 Claims**

1. A method for producing a polycrystalline translucent alumina sintered body in which the content of MgO is 0.001–0.04% by weight, the content of each La_2O_3 and Y_2O_3 is 0.001–0.01% by weight, a weight ratio of $MgO/(La_2O_3+Y_2O_3)$ is 0.5 to 2.0, and the translucent alumina sintered body has an in-line transmission of more than 40% at a wavelength of 0.6 μm, which comprises adding to alumina powder having a purity of more than 99.8%; MgO or a compound forming MgO, wherein a weight percent of MgO is within the range of 0.01–0.1%; La_2O_3 or a compound forming La_2O_3, wherein a weight percent of La_2O_3 is within the range 0.001–0.01%; and Y_2O_3 or a compound forming Y_2O_3, wherein a weight percent of Y_2O_3 is within the range 0.001–0.01%; thoroughly mixing the resulting mixture, shaping the mixture into a desired form and firing the shaped article under a vacuum or in either an atmosphere of hydrogen gas or dissociated ammonia gas, wherein an oxygen concentration is within a range of 10^{-15}–10^{-25} atm.

4,495,117
METHOD FOR THE MANUFACTURE OF CONTACT LENSES USING MICROWAVE ENERGY

Bernard Feurer, Montgiscard, and Gilles Pigot, Toulouse, both of France, assignors to Alcon Pharmaceuticals, Limited, Cham, Switzerland

Filed Mar. 17, 1983, Ser. No. 476,385
Claims priority, application France, Mar. 17, 1982, 82 04663
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.4 **12 Claims**



1. A method of manufacturing a contact lens of appropriate optical quality consisting of: constructing water-tight molds, reproducing, in the mold cavity, the shape of the lens desired and wherein said water-tight molds are composed of a substantially transparent material with respect to ultra high frequency electromagnetic waves, and said water-tight molds being constructed so as to possess a thermic inertia much higher than the portion of basic composition needed to make a lens;

preparing a basic composition starting with one or several monomers having double polymerizable bonds, and having an absorbent quality with respect to ultra high frequency waves;

insuring polymerization of the composition within the sealed molds, through irradiation by means of ultra high frequency waves;

said method being characterized in that the polymerization operation is realized by arranging several molds (1), each containing an amount of basic composition, within at least one sealed metallic chamber (9) constituting a resonant cavity of a unique mode for the frequency of the ultra high frequency waves used, said molds being positioned in an area of the cavity where the electromagnetic field is approximately homogeneous and being distributed so that the amounts of basic composition contained in said molds act as a load fitted to the inside of said resonant cavity.

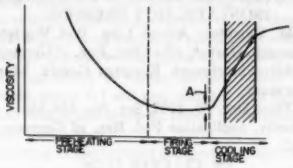
4,495,118
CERAMIC PLATES AND METHOD FOR THE PRODUCTION THEREOF

Hideo Ikami, Tochigi, Japan, assignor to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,724
Int. Cl.³ C04B *33/24*
U.S. Cl. 264—25 **12 Claims**

1. A method for producing ceramic plates which comprises drawing a green body from an extruder in a curved shape, cutting and spreading said green body in a plate form, rolling the resulting green plates in the same direction as that of drawing, subjecting the rolled plates to heat treatment with far infrared rays or high-frequency heating before the plates contain a moisture content reduced to less than 15% while the

plates are transferred in the same direction as that of drawing, drying the plates thus treated while the plates are further transferred in the same direction, and then firing the plates in a kiln.

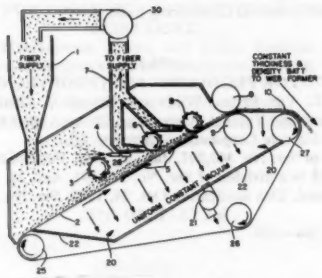


4,495,119

METHOD FOR PRODUCING HOMOGENEOUS BATTS OF AIR-LAID FIBERS

Raymond Chung, 208 Alcott Dr., Neenah, Wis. 54956

Filed Jul. 12, 1982, Ser. No. 397,376
Int. Cl.³ B29N *19/00*
U.S. Cl. 264—37 **13 Claims**



1. A method of producing a batt of air-laid fibers comprising:
(a) depositing an excess of feed fibers on a moving foraminous fabric to form a batt having a machine direction and a cross-machine direction;
(b) compacting the batt against the fabric by maintaining an air pressure differential through the batt and the fabric which is constant with time and uniform in the cross-machine direction;
(c) skimming an upper layer of fibers from the batt with a first scarfing roll, wherein the skimmed fibers are deposited on the moving fabric upstream of said first scarfing roll;
(d) reforming the batt by rearranging the fibers within the batt; and
(e) skimming an upper layer of the fibers from the reformed batt with a second scarfing roll wherein the skimmed fibers are recycled and deposited upstream of the first scarfing roll and wherein a batt of relatively uniform basis weight is produced.

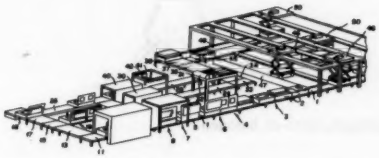
4,495,120

METHOD FOR MANUFACTURE OF SHAPED ARTICLE OF POLYURETHANE FOAM

Kenji Shimomura, Yokohama, Japan, assignor to Ikeda Bussan Co., Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 319,363
Claims priority, application Japan, Nov. 11, 1980, 55-157669
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—51 **11 Claims**

1. A method for the substantially concurrent manufacture of at least a first and a second type of shaped article of polyurethane foam in molds of a first and a second group, said first group of molds being adapted to the formation of said first type of shaped article and second type of molds being adapted to the formation of said second type of shaped article, said first type of foamed shaped article having predetermined physical properties different from the said second type of foamed shaped article, comprising the sequential steps of
providing a plurality of molds of said first and said second groups,
providing a primary temperature adjustment to all of said molds,
selecting and then separating molds of said first group from molds of said second group and causing the molds of said first group to be conveyed along at least one predetermined path and the molds of the second group to be conveyed along at least one other predetermined path,
providing an appropriate secondary temperature adjustment



to the molds of said first group and to molds of said second group on their appropriate paths
injecting the appropriate foamable urethane resin reaction mixture to the molds of said first group and the molds of second group
providing a first series of heater units, each comprising a water containing bath and heating means therefor to maintain said bath at a first predetermined temperature
conveying molds of said first group to said first heater units and immersing said molds in heated water baths thereof
providing a second series of heater units each comprising a water containing bath and a heating means therefor to maintain said bath at a second predetermined temperature
conveying molds of said second group to said second heater units and immersing said molds in the heater water baths thereof
whereby the urethane resin mixtures in said molds is permitted to foam and set within said molds.

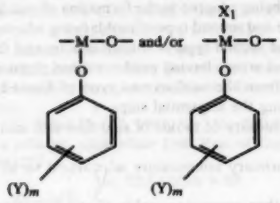
4,495,121

PROCESS FOR PRODUCING INORGANIC FIBER

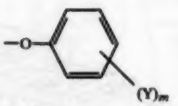
Shozo Horikiri, Amagasaki; Hidekimi Kadokura, Niihama; Masaji Harakawa, Niihama; Kunio Saegusa, Niihama, and Masao Yamagiwa, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Nov. 23, 1982, Ser. No. 444,044
Claims priority, application Japan, Nov. 30, 1981, 56-193315; Sep. 27, 1982, 57-169324
Int. Cl.³ C01F *7/02*
U.S. Cl. 264—56 **3 Claims**

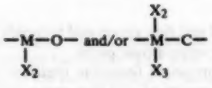
1. A process for producing inorganic fiber which comprises spinning a spinning solution in organic solvent of polymetaloxane to form a precursor fiber, followed by calcination thereof, wherein said solution contains polymetaloxane comprising 0.1–95 mole % of a structural unit represented by the following general formula and 99.9–5 mole % of the following formula:



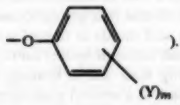
(wherein M represents a trivalent or tetravalent metal atom, Y represents an organic group, nitro or halogen, m represents an integer from 1 to 3, X_1 represents an organic group which is the same as or different from



hydrogen, nitro or halogen.



(wherein, M is the same as shown hereinabove, X_2 and X_3 represent organic group other than



4,495,122

METHOD FOR THE PRODUCTION OF A POLYCRYSTALLINE SHAPED BODY OF SILICON CARBIDE

Gerhard Leimer, and Ernst Gugel, both of Bavarian, Fed. Rep. of Germany, assignors to Feldmiihle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,324

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044161

Int. Cl.³ C04B *35/56*

U.S. Cl. 264—65 **4 Claims**

1. In a method for the production of a polycrystalline shaped body of silicon carbide of a density of at least 98% of the theoretical density of silicon carbide, prepared through pressureless sintering at temperatures from 1,900° to 2,200° C. from at least 97 weight % of α-silicon carbide or β-silicon carbide under addition of up to 3 weight % of boron, the improvement which comprises said shaped body being prepared without any carbon additions to the batch and being pressureless sintered in a carbon containing protective gas atmosphere.

4,495,123

DENSE SHAPED ARTICLES CONSISTING OF POLYCRYSTALLINE HEXAGONAL BORON NITRIDE AND PROCESS FOR THEIR MANUFACTURE BY ISOSTATIC HOT PRESSING

Klaus Hunold, Kempten; Alfred Lipp, Bad Worishofen, and Klaus Reinmuth, Durach, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,164

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201563

Int. Cl.³ C01B *21/06*

U.S. Cl. 264—69 **5 Claims**

1. A process for the manufacture of a shaped, isotropic article of boron nitride article by isostatic hot-pressing using an inert gas as a pressure-transfer medium, which comprises: introducing boron nitride powder having a boric oxide content of not more than 1% into a prefabricated casing, compacting the boron nitride by vibrating the casing; sealing the casing containing the compacted boron nitride vacuum tight under a vacuum; heating the encased compacted boron nitride in a high-pressure zone to from about 1200° to 1500° C. while gradually increasing the gas pressure to about 50 to 300 MPa until dense shaped articles are formed; and cooling and recovering the shaped articles wherein the boron nitride powder employed is devoid of sintering aids.

4,495,124

METHOD FOR PRODUCING POLYPROPYLENE SHEET

Donald L. Van Erden, Wildwood; Russell J. Gould, Mount Prospect, and Yukio A. Matsunaga, Chicago, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Division of Ser. No. 343,501, Jan. 28, 1982, Pat. No. 4,428,720, which is a division of Ser. No. 138,491, Apr. 22, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 544,480

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—130 **15 Claims**

1. The method for producing an abrasion resistant sheet from linearly crystallizable polypropylene material, said method comprising the steps of:

(a) extruding said material in a sheet at a first temperature at which said material is rendered flowable;

(b) casting said sheet on plural driven, heat transfer casting rolls and feeding said sheet in a forward direction to form said sheet while maintaining said casting rolls at a temperature below said first temperature and cooling said sheet to a second temperature below said first temperature;

(c) feeding said sheet through a cooling bath to cool said sheet to a third temperature below said second temperature;

(d) feeding said sheet through heated and driven compression rolls to maintain said sheet at a fourth temperature, to compress said sheet, and to cause flow of said material in said sheet in the forward direction so as to reduce the cross-sectional thickness of said sheet;

(e) placing said sheet under tension with a tensioning means in the forward direction in conjunction with said compression rolls so as to cause orientation of the macromolecular chains in said material of said sheet as said sheet exits said compression rolls, said step of placing said sheet under tension including the steps of

(1) providing as part of said tensioning means one or more chill rolls and cooling said chill rolls so as to cool said

sheet to a fifth temperature below said fourth temperature;

(2) providing as part of said tensioning means one or more surface treatment rolls and heating said surface treatment rolls for reheating a surface of said sheet to a sixth temperature above said fifth temperature and between about 350 degrees F. and about 525 degrees F. for a time period sufficient to cause surface fusion to a depth between about 0.1 mil and about 3 mils but for a time period insufficient to cause fusion in the entire thickness of said sheet; and

(3) providing as part of said tensioning means one or more stress relieving rolls and heating said stress relieving rolls to a seventh temperature below said sixth temperature so as to cause said sheet to reach a uniform temperature throughout its cross section for effecting stabilization of said sheet;

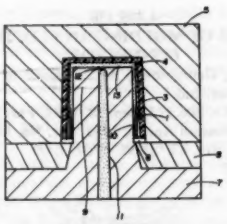
whereby the rolls of said tensioning means not only place said sheet under tension in conjunction with said compression rolls for effecting said orientation of the macromolecular chains, but also simultaneously effect said cooling of said sheet, said surface fusion of said sheet, and said stabilization of said sheet.

4,495,125

METHOD FOR FORMING A SYNTHETIC-RESIN-MADE CONTAINER

Yoshiharu Hatakeyama, Tokyo, and Kenzo Teshima, Chiba, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,067
Claims priority, application Japan, May 13, 1982, 57-79243
Int. Cl.³ B29D *3/00, 9/00*
U.S. Cl. 264—132 **4 Claims**



1. A method for forming a synthetic-resin-made container, said method comprising:

forming a relatively thin tubular member of soft material and having open opposite first and second ends, and imparting an ornamentation or decoration at least to an outer surface of said tubular member;

forming an outer sleeve of transparent or semitransparent synthetic resin material and having opposite first and second ends, with at least said first end of said outer sleeve being open;

loosely inserting said tubular member into said outer sleeve until said first end of said tubular member comes into contact with said second end of said outer sleeve;

disposing said outer sleeve and said tubular member in an injection molding die, with said second end of said outer sleeve being positioned inwardly of said die, and defining in cooperation with a core of said die a cylindrical space within said tubular member and said outer sleeve, said core having at an inner end thereof adjacent said second end of said outer sleeve an injection port;

injecting through said injection port molten resin which is fusible with said material of said outer sleeve into said cylindrical space, and causing said molten resin to flow from an inner end to an outer end of said cylindrical space, while pressing said tubular member into close contact with an inner surface of said outer sleeve; and

solidifying said molten resin to form therefrom an inner sleeve, while fusing together said outer and inner sleeves at respective opposite ends thereof, thereby hermetically sealing said tubular member between said outer and inner sleeves.

4,495,126

ADHESIVE ACTIVATED EMULSION TO A POLYESTER YARN

William O. Deeken, Stow, and Charles L. Davis, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 2, 1982, Ser. No. 446,106
Int. Cl.³ B29G *5/00;* **B29C** *25/00;* **D01D** *5/12;* **D01F** *11/00*
U.S. Cl. 264—137 **11 Claims**

1. A process for the application of an adhesive activated emulsion to polyester yarn comprising;

a. passing undrawn polyester yarn around a heated feed roll rotating with a surface speed in the range of 54 to 274 meters per minute, wherein said feed roll is at a temperature of from 80° C. to 125° C.;

b. passing said yarn to and around a snub pin, thereafter;

c. passing said yarn past a heated draw platen wherein said platen is at a temperature of from 150° C. to 235° C., thereafter;

d. contacting said yarn with a means of applying an adhesive activated emulsion, thereafter;

e. passing said yarn to a heated draw roll rotating with a surface speed in the range of 150 to 550 meters per minute, wherein said draw roll is at a temperature of from 125° C. to 200° C., thereafter;

f. passing said yarn to a windup roll operating at a surface speed in the range of 150 to 550 meters per minute.

4,495,127

METHOD OF MANUFACTURING CONCRETE SLEEPER BLOCKS

Stig Thim, Växjö , Sweden, assignor to A-Betong AB and Sabema Material AB, both of Växjö, Sweden

Filed Mar. 15, 1983, Ser. No. 475,661
Claims priority, application Italy, Jul. 9, 1982, 22322 A/82
Int. Cl.³ B28B *23/06*
U.S. Cl. 264—157 **3 Claims**

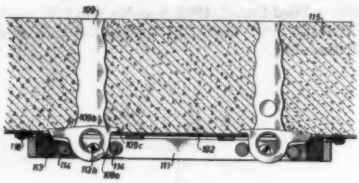
1. In a method of manufacturing concrete sleeper blocks (115) of varying length and having a mutually different number of attachment means (109) for mounting rails thereto, said attachment means being in mutually different positions on said blocks and said blocks being intended for the manufacture of a railway switching-point, including the steps of placing a plurality of thin matrix plates (102) having lengths corresponding to the desired lengths of the different sleeper blocks end to end in an elongate mould bed (101A), said matrix plates being provided with detachably mounted attachment means (109) ex-

tending upwardly therefrom; tensioning reinforcing rods in said mould bed; pouring concrete into the mould bed and leaving the concrete to cure; removing the hardened coherent concrete body from the mould; removing the matrix plates from said concrete body and from the attachment means cast therein; and cutting the concrete body into finished sleeper blocks, the improvements characterized by:

(a) disposing a rigid, structurally supporting frame memeber (**111**) below a pair of adjacent matrix plate apertures (**102***a*),

(b) loosely attaching the frame member to the matrix plate,

(c) individually inserting a pair of attachment means through the apertures and into the frame member,



(d) passing an offset arm of a crank lever (**112**) through aligned holes (**109***a*, **111***a*) in the frame member and one of the attachment means,

(e) rotating the crank lever to urge said one attachment means into direct contact with position location members (**114**) mounted to and extending transversely across the frame member,

(f) repeating steps (d) and (e) for another one of the attachment means, and

(g) upon casting and hardening of the sleeper blocks, disengaging said frame member from the matrix plate and the in-cast attachment means for renewed use in a subsequent casting operation.

4,495,128

METHOD FOR COLORING POLYVINYLCHLORIDE

Jan U. Stoffelsma, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Jun. 16, 1980, Ser. No. 159,749

Claims priority, application Netherlands, Jun. 14, 1979, 7904675

Int. Cl.[3] **D01F** *1/02*

U.S. Cl. 264—211 **1 Claim**

1. A method of manufacturing colored injection molded or extruded poly(vinyl chloride) articles which comprises adding to the mold or extruder along with the poly(vinyl chloride) a coloring composition containing at least 40% by weight of coloring pigments and at most 60% by weight of glycerol monostearate, said coloring composition being obtained by mixing pigment particles with a molten mass of glycerol monostearate and solidifying the molten mass, said coloring composition being added in such an amount that the molded article contains a maximum of 5% by weight glycerol monostearate.

4,495,129

PROCESS FOR PRODUCING HIGH PRECISION APERTURES IN PLASTIC COMPONENTS

Alfred L. Newberry, Moore, and Francis A. Lassak, Oklahoma City, both of Okla., assignors to Magnetic Peripherals Incorporated, Minneapolis, Minn.

Filed Sep. 6, 1983, Ser. No. 529,300

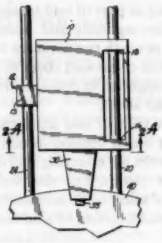
Int. Cl.[3] **B29C** *25/00*

U.S. Cl. 264—235 **4 Claims**

1. A process for forming and aligning a pair of precisely dimensioned apertures in a plastic component consisting of a carriage for supporting a magnetic transducer for reading and/or writing on a magnetic disk having a pair of apertures in alignment which are bore holes to be used for sliding on a guide rod in an operative structure, comprising the steps of:

(a) injection molding the carriage from a composition which includes a crystalline or semicrystalline material during a molding step, said carriage having said apertures partially formed therein during said molding step;

(b) inserting an oversized annealing rod into said apertures during an inserting step; wherein said annealing rod is oversized with respect to both of said apertures, and said rod is inserted into and extends through both of said apertures prior to said annealing step, thereby causing said annealing rod to finally align and form said apertures with respect to each other;



(c) placing said carriage, with said annealing rod installed in said apertures, in an oven at an elevated temperature for a period of time during an annealing step; and

(c-1) Cooling said carriage with said annealing rod in said apertures;

(d) removing said annealing rod from said apertures during a removal step.

4,495,130

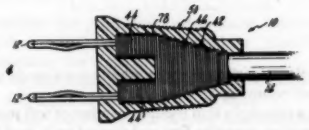
METHOD OF MOLDING AN ELECTRICAL CONNECTOR

Paul A. Hedrick, Georgetown, Ky., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 306,113, Sep. 28, 1981, Pat. No. 4,398,785. This application Apr. 4, 1983, Ser. No. 481,976

Int. Cl.[3] **B29C** *6/04, 1/00*

U.S. Cl. 264—255 **4 Claims**



1. The method of making an electrical connector consisting essentially of the steps of: electrically and mechanically attaching two contacts to corresponding bared ends of two insulated stranded conductors of an electrical cord to form a pair of connections; inserting said connections and portions of said contacts and said conductors contiguous to said connections in the cavity of a mold having two spaced arm cavity regions joined to a base cavity region with said two connections disposed in respective arm cavity regions and said conductors extending into said base cavity region; at least said two arm cavity regions of said mold cavity having irregularly shaped inner surfaces with raised and depressed portions; injecting electrical insulating material in fluid condition into said cavity and continuing the injection until the unoccupied space of said cavity is filled; said injection being at a flow rate providing a turbulent flow over said irregularly shaped surfaces which tends to force any loose strand at the bared ends of said conductors away from said irregularly shaped surfaces; permitting

the insulating material within said cavity to solidify thus forming a first molded body having spaced arms surrounding said connections and joined to a base with any loose strand at the bared ends of said conductors being effectively captured in said first body; and subsequently injection molding a second insulating body substantially surrounding said first body and extending between said arms to further insulate said connections.

4,495,131

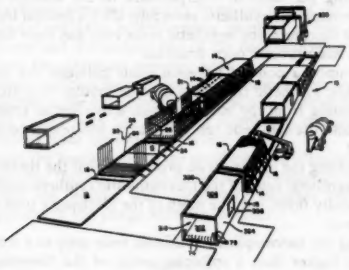
METHOD FOR PRE-CASTING STEEL REINFORCED CONCRETE BOX-LIKE MODULES

Jamie L. Del Valle, Rio Piedras, P.R., assignor to Master Modular Homes, Inc., Toa Baja, P.R.

Division of Ser. No. 223,434, Jan. 8, 1981, Pat. No. 4,372,906, which is a division of Ser. No. 942,377, Sep. 14, 1978, Pat. No. 4,272,050. This application Sep. 30, 1982, Ser. No. 430,994

Int. Cl.³ B28B *1/16*

U.S. Cl. 264—256 **2 Claims**



1. A method of forming pre-cast modules from a concrete formulation, said modules each having a floor, a pair of spaced apart side walls extending up from said floor, and a roof extending between the upper ends of said side walls, said method being performed on a plurality of spaced apart planar casting beds of 4 in number, said casting beds being arranged serially in a continuous row, said method being further performed with a pair of movable interior wall and ceiling forms and a pair of exterior movable wall forms, the thickness of the floor, walls and roof of said modules and the concrete formulation being such that concrete formed therefrom will cure sufficiently in one day so that said floor can substantially support the weight of said interior forms and said roof can self support at least half of its span and said concrete will cure sufficiently in three days to render a complete module self supporting, said serially arranged continuous row of casting beds being designated one, two, three, and four; said method comprising substantially the following sequence of steps:

on an initial day disposing on a previously cast floor on casting bed one, one of said interior and exterior forms, and casting a floor on casting bed two while permitting at casting beds three and four previously cast modules including walls and roofs to fully cure;

on the immediately following said initial day (the second day), pouring walls and a roof with the forms to complete the pouring of a module on casting bed one, while permitting the floor on casting bed two to cure and removing the now fully cured module on casting bed three while permitting the module as casting bed four to continue curing;

on the day immediately following the second day (the third day), removing the exterior forms from casting bed one and removing one of said interior forms from casting bed one and then shoring the roof of the module at casting bed one along a median strip and then removing the other of said interior forms from casting bed one, and assembling said interior and exterior forms removed from casting bed one on casting bed two, and pouring a floor slab on casting bed three, and permitting the module on casting bed four to continue curing;

on the day immediately following the third day (the fourth day), permitting the module cast on casting bed one to continue curing, pouring the concrete walls and roof to complete the pouring of a module on casting bed two, while permitting the floor slab on casting bed three to cure, and removing the fully cured module from casting bed four;

on the day immediately following the fourth day (the fifth day), permitting the module on casting bed one to continue curing, and removing from the module cast on casting bed two on the fourth day the exterior forms and one interior form and then shoring said module along a median strip and the removing the other of said interior form from said module, and assembling said interior and exterior forms removed from casting bed two on casting bed three, and casting a floor slab on casting bed four;

on the day immediately following the fifth day (the sixth day), removing the fully cured module from casting bed one, and permitting the concrete in the module on casting bed two to cure, and pouring the walls and roof into the forms on casting bed three to complete the pouring of a module on casting bed three, and permitting the floor slab on casting bed four to cure;

on the day immediately following the sixth day (the seventh day), casting a floor slab on casting bed one, while permitting the module on casting bed two to continue curing, and removing the exterior forms and one of the interior forms from the module cast on the sixth day on casting bed three and then shoring the roof of said module along a median strip and then removing the other interior form from said module on said casting bed three and assembling said interior and exterior forms removed from casting bed three on the floor slab on said casting bed four; and

on the day immediately following the seventh day (the eighth day), permitting the floor slab poured on said casting bed one on said seventh day to cure, while removing the now fully cured module cast on the fourth day on casting bed two from casting bed two, and permitting the concrete forming the walls and roof of the module poured on casting bed three on the sixth day to continue curing, and pouring the walls and ceiling into the forms assembled on casting bed four to complete the pouring of a module on casting bed four.

4,495,132

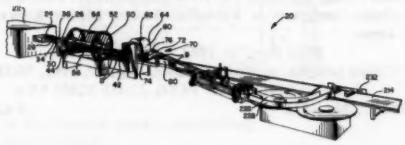
METHOD AND APPARATUS FOR MAKING ANTIQUE BRICK

Joseph A. Johnson, Malakoff, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Sep. 23, 1982, Ser. No. 422,136

Int. Cl.³ B28B *11/08*

U.S. Cl. 264—293 **20 Claims**



1. An apparatus for treating elongated products having longitudinal edges thereon comprising:

first transport means for transporting said products such that the longitudinal edges are substantially perpendicular to the direction of travel,

first turning means for turning said products such that the longitudinal edges are substantially parallel to the direction of travel of the products and such that the products

are moved in single file, said turning means including a first conveyor for receiving said product thereon,

a second conveyor for receiving products thereon from said first conveyor and having an axis of movement divergent from that of said first conveyor,

means for treating selected longitudinal edges of the products as the products are moved on said second conveyor, and

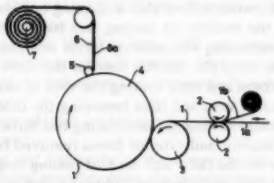
second turning means for receiving said products from said second conveyor and for turning the products such that the longitudinal edges are substantially in the same orientation as said products on said first transport means and for depositing the products onto a third moving conveyor, said third conveyor moving slower than said first conveyor and in line with said first conveyor.

4,495,133

PROCESS FOR THE PRODUCTION OF PILE-SURFACED TEXTILE STRUCTURES

Taizo Sugihara, and Tsuyoshi Aoki, both of Moriyama, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 16, 1983, Ser. No. 523,671
Claims priority, application Japan, Aug. 17, 1982, 57/141731
Int. Cl.³ B32B *33/00*
U.S. Cl. 264—504 **6 Claims**



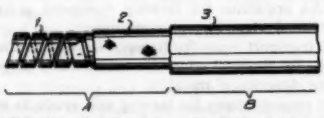
1. A process for the production of a pile-surfaced textile structure which comprises the steps of: forming a composite by adhering a low-melting point thermoplastic resin material to one side of a substantially flat sheet of backing material by melting said resin material, said resin material becoming molten when heated at a given temperature and said backing material being an air-permeable textile structure which remains substantially intact and is not softened upon being heated at a given temperature; heating said composite at said given temperature to melt said resin material; and injecting an air-jet through said heated composite form the side of said backing material which is opposite said resin material so that said resin is projected into fibrous forms which form a pile surface on said composite.

4,495,134

METHOD FOR MANUFACTURING A FLEXIBLE TUBE FOR AN ENDOSCOPE

Teruo Ouchi, Kawagoe, and Hiromichi Shibuya, Tokyo, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Japan

Filed Nov. 16, 1982, Ser. No. 441,998
Claims priority, application Japan, Nov. 17, 1981, 56-184060
Int. Cl.³ B29C *17/07, 19/00, 23/00*; B29D *9/04*
U.S. Cl. 264—516 **8 Claims**



1. In a method for manufacturing a flexible tube for use in an endoscope, the flexible tube comprising a basic tubular core structure including at least an inner metallic tubular spiral having an outer side and an outer meshwork tube covering the outer side of the metallic tubular spiral, the improvement comprising the steps of:

(a) locating a preformed homogeneous thermoplastic synthetic resin tube over the outer surface of the meshwork tube with a contact pressure therebetween to form an intermediate product by the steps of

temporarily closing the hollow interior of the basic tubular core structure;

positioning a forcibly enlarged open end of the homogeneous thermoplastic synthetic resin tube over one end of the basic tubular core structure;

inflating the thermoplastic synthetic resin tube by supplying compressed gas into the interior thereof until the inner diameter of the inflated termoplastic synthetic resin tube corresponds to the outer diameter of the basic tubular core structure;

feeding the thermoplastic synthetic resin tube axially over the basic tubular core structure;

reducing the internal overpressure in the interior of the thermoplastic synthetic resin tube after a desired length of said thermoplastic synthetic resin tube has been fed over the basic tubular core structure

whereupon a contact pressure exists between the thermoplastic synthetic resin tube and the tubular core structure resulting from the inherent contractive forces tending to restore the synthetic resin tube to its unstressed condition; and

(b) treating the intermediate product so that the thermoplastic synthetic resin of the thermoplastic synthetic resin tube partially flows into the mesh of the meshwork tube by the step of

heating the thermoplastic synthetic resin tube to a temperature higher than a softening point of the thermoplastic synthetic resin forming the same,

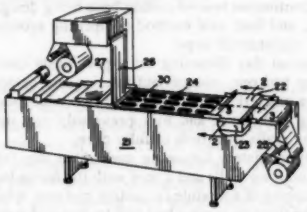
whereupon the thermoplastic synthetic resin protrudes into the mesh of the meshwork tube and so that upon plasticizing the resin tube forms a coating layer bonded integrally to the basic tubular core structure.

4,495,135

METHOD FOR FORMING CONTAINER HAVING RE-ENTRANT FLANGE

Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 9, 1982, Ser. No. 406,374
Int. Cl.³ B29C *17/04*
U.S. Cl. 264—553 **5 Claims**



1. A short-stroke method for forming thermoformed unitary container members having an undercut flange, comprising the steps of:

longitudinally moving a web of thermoformable material over an undercut flange-forming member along the periphery of a thermoforming molding cavity, the undercut flange-forming member having a movable leading end that is at the upstream end of the molding cavity, the upstream end being defined by the direction of said longitudinal movement of the web, the undercut flange-form-

ing member having a stationary trailing end that is downstream of the leading end of the flange-forming member;

thermoforming a unitary container member within the molding cavity by thermoforming a portion of the web over the flange-forming member and into a body-forming member of the molding cavity, said unitary container member having a body, said container member body having a flange along the periphery of the walls of the container member body;

said thermoforming step including imparting a re-entrant condition to the flange so as to form an undercut portion while thermoforming said body and said flange from the web of thermoformable material, said step of imparting a re-entrant condition including drawing the thermoformable material over the undercut flange-forming member;

opening the leading end of the molding cavity flange-forming member by moving same through a short-stroke in said upstream direction away from the molding cavity and by moving same away from the trailing portion of the flange-forming member;

separating the body-forming member and the leading end of the flange-forming member from the rest of the molding cavity until the body-forming member of the molding cavity and the leading end of the flange-forming member clear the container member body;

slidingly moving the web and the container member formed therein in the upstream direction and away from the molding cavity until the container member is completely removed from the molding cavity; and

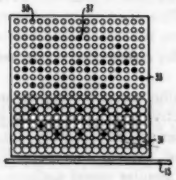
closing the leading end of the molding cavity flange-forming member through a short-stroke in a downstream direction until the leading end operatively engages the trailing portion of the flange-forming member.

4,495,136

MAXIMUM POWER CAPABILITY BLANKET FOR NUCLEAR REACTORS

Thomas M. Camden, Jr., Apollo, and William L. Orr, Ligonier, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1982, Ser. No. 377,227
Int. Cl.³ G21C *3/32*
U.S. Cl. 376—172 **10 Claims**



1. In combination with the core for a nuclear pressurized water reactor having a core barrel which encloses a plurality of vertically oriented and closely spaced elongated fuel assemblies, each of said fuel assemblies having a generally square cross-sectional configuration with four axial exterior faces, the combined array of said fuel assemblies having the general configuration of a right circular cylinder to the extent permitted by the square configuration of those fuel assemblies which are positioned at the periphery of said combined fuel assembly array, a portion of said peripherally positioned fuel assemblies of said array having one axial peripheral face which forms a portion of the periphery of said combined fuel assembly array, the remainder of said peripherally positioned fuel assemblies of said array having two axial peripheral faces which form a portion of the periphery of said combined fuel assembly array, a flow baffle closely surrounding said axial peripheral faces of said fuel assemblies which form the outer periphery for said combined fuel assembly array to direct the flow of coolant fluid upwardly through said fuel assembly array during operation of said reactor, those of said fuel assemblies which are positioned interiorly within said array each comprising a plurality of regularly spaced parallel and coextensive relatively small diameter fuel rods each of which comprises fissile pellets stacked within a sealed metallic cladding, said small diameter fuel rods being primarily supported by upper and lower nozzles and by grid structures spaced along the length of said rods, each of said fuel assemblies which are interiorly positioned within said combined array having a high H/U ratio, and a relatively small proportion of control rod thimbles spaced among said small diameter fuel rods; the improved constructions for said fuel assemblies which are peripherally positioned in said combined array;

said improved peripherally positioned fuel assemblies each incorporating two different fuel rod designs, the first of said fuel rod designs being the same as the fuel rod designs used in said fuel assemblies which are interiorly positioned within said combined array, and the second of said fuel rod designs differing from said first fuel rod designs in that the diameter of said second fuel rod designs is larger than that of said first fuel rods and the pellets of said second fuel rods comprise fertile material with those portions of said peripherally positioned assemblies which incorporate said second fuel rods having a low H/U ratio, and a relatively small proportion of control rod thimbles spaced among said fuel rods of said peripherally positioned arrays;

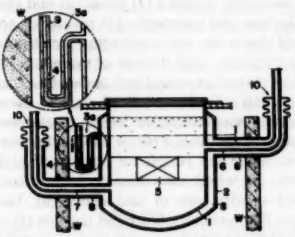
said first fuel rod designs and said second fuel rod designs positioned in separate discrete locations within each of said peripherally positioned fuel assemblies, said second fuel rods positioned nearest the peripherally positioned axial faces of said fuel assemblies which form the periphery of said combined array, and said first design fuel rods positioned furthest away from the peripherally positioned axial faces of said fuel assemblies which form the periphery of said combined array.

4,495,137

NUCLEAR REACTOR

Akira Otsubo, Kashiwa, Japan, assignor to Doryokuro Kakunenaryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 333,185
Claims priority, application Japan, Jan. 21, 1981, 56-7336; Mar. 16, 1981, 56-37627
Int. Cl.³ G21C *13/00, 17/00*
U.S. Cl. 376—171 **15 Claims**



1. A fast breeder reactor comprising:

a reactor vessel;

a guard vessel enclosing said reactor vessel, spaced a predetermined distance from said reactor vessel; and

a liquid manometer structure, the space defined between said reactor vessel and said guard vessel communicating with the exterior of said guard vessel only through said liquid manometer structure, said manometer structure being filled with a liquid so as to liquid-seal said space between said reactor vessel and said guard vessel with respect to the exterior of said guard vessel said space between said

reaction vessel and said guard vessel being charged with an inert gas so as to maintain said space at a pressure substantially greater than atmospheric pressure.

4,495,138

JUNCTION DEVICE BETWEEN THE DELIVERY DUCT OF A PRIMARY PUMP AND A DUCT JOINED TO THE CORE SUPPORT OF A FAST NEUTRON NUCLEAR REACTOR

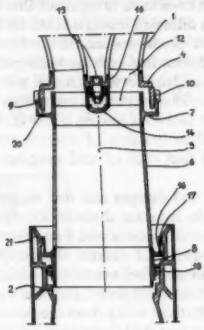
Michel Thévenin, Fresnes, and Georges Jullien, St Michel sur Orge, both of France, assignors to Novatome, Le Plessis Robinson, France

Filed May 12, 1982, Ser. No. 377,483

Claims priority, application France, Jun. 19, 1981, 81 12084

Int. Cl.³ G21D *1/04*

U.S. Cl. 376—203 **3 Claims**



1. A junction device between the delivery duct of a primary pump and a duct joined to the core support of a liquid metal cooled fast neutron nuclear reactor, in which the liquid metal constituting the primary fluid of said reactor is pumped to the base of the core of said reactor by primary pumps which inject the liquid metal into ducts joined to said core support for the purpose of cooling said core, comprising

(a) a frusto-conical sleeve (6) disposed as an extension of said pump delivery duct and having its smaller base situated near the outlet of said delivery duct and its larger base near the inlet of said duct (2) joined to said core support;

(b) a connecting member (7) joined to said sleeve (6) to its smaller base and symmetrical in revolution around the axis of said sleeve (6), said connecting member carrying in its central portion, near the axis of symmetry (5), a movable portion (14) of an articulated connection means the fixed portion (16) of which is fixed on said pump duct, thus permitting simultaneously lateral displacements and the retention of said sleeve (6) on said pump duct against axial forces, while the peripheral portion of said connecting member (7), which has a diameter larger than the diameter of said smaller base of said sleeve (6), has a spherical surface (9), symmetrical around the axis (5) of said sleeve (6), which is complementary to a corresponding surface machined on a piece (4) rigidly fixed on the end of said pump delivery duct, fluid-tightness between these two surfaces disposed against one another being achieved with the aid of a labyrinth seal (10), while the pressure of the liquid metal delivered by said pump, applied to the portion of said connecting member (7) which is located between its peripheral portion and its portion fixed to said sleeve (6), enables exertion of an axially directed force on sleeve (6);

(c) a sealing device (18) inserted between the outlet end of said sleeve (6) and said duct (2) joined to said core support, the end of said sealing device on which the outlet end of said sleeve (6) is engaged having a diameter different from that of the end of said sleeve; and

(d) an elastic means (16) inserted between the end of said sleeve (6) and a support member fastened to said core support, said elastic means extending over the entire periphery of said sleeve (6) for the lateral support thereof, the outlet end of said sleeve being freely movable in the axial direction relative to said duct (2) joined to said core support.

4,495,139

RADIOACTIVE-WASTE CONTAINER WITH LEAK MONITOR

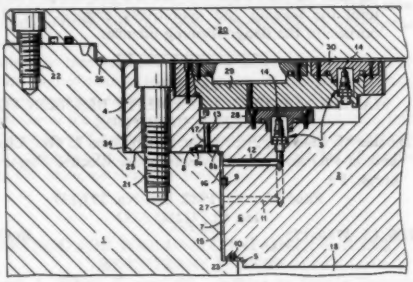
Klaus G. Janberg, Ratingen-Lintorf, and Dieter Methling, Hattingen, both of Fed. Rep. of Germany, assignors to GNS Gesellschaft fur Nuklear-Service mbH, Essen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,769

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127219

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—203 **10 Claims**



1. A container for radioactive waste, said container comprising:

a massive metallic vessel having an interior adapted to receive radioactive waste and having a mouth formed with inner and outer spaced generally planar and annular vessel shoulders and formed therebetween with a nonplanar intermediate annular vessel surface;

a massive metallic cover formed with a plug fitted in said mouth and having respective inner and outer plug shoulders closely juxtaposed with said vessel shoulders and a nonplanar intermediate annular plug surface complementary to said intermediate vessel surface;

an inner ring seal engaged snugly between said inner shoulders;

a pair of generally concentric and spaced outer ring seals engaged snugly between said outer shoulders and forming an annular outer chamber therebetween;

an intermediate ring seal engaged snugly between said intermediate surfaces and forming therebetween and with said inner ring seal an annular inner chamber and therebetween and with said outer ring seals an intermediate chamber, said cover being formed with respective inner, intermediate, and outer passages each having one end opening into the repective chamber and another end; and

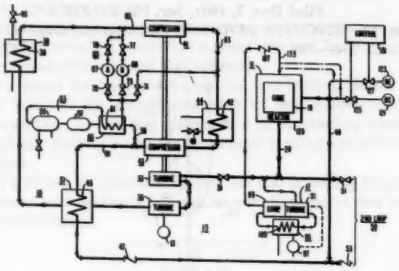
means on said cover at the other ends of said passages for sampling gases therein and in the respective chambers.

4,495,140

PERMANENT DEACTIVATION OF NUCLEAR REACTOR

Edgar L. Kochka, Pittsburgh, Pa.; Joseph M. Tobin, deceased, late of McMurray, Pa., and Arlene F. Neve, administratrix, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1981, Ser. No. 324,365
Int. Cl.³ G21C 7/06
U.S. Cl. 376—207 16 Claims



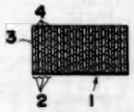
1. The method of permanently deactivating, in the event of an emergency, a nuclear reactor whose working fluid is a gas and whose fuel is contained in a body having channels for conducting the working fluid, the said method comprising deriving borane from boron trifluoride etherate in which the boron is substantially enriched in B_{10}, reacting said borane with one or more of the class consisting of unsaturated hydrocarbons and ammonia to produce respectively one or more of the class consisting of carboranes, alkyl boranes, and alkyl diboranes or boron nitrogen products, (the carboranes, boranes, diboranes, and carbon nitrogen products being all herein referred to as last-named compounds), injecting one or more of said last-named compounds into said working fluid so that said compounds are circulated with said working fluid through said channels of said body, while said compounds are in said body converting said compounds into one or more of the class of materials consisting of boron and the highly-refractory compounds of boron and carbon and/or boron and nitrogen, and adhering said material to the walls of said channels, sufficient compounds being converted to provide sufficient converted material to deactivate said nuclear reactor permanently.

4,495,141

TAGGING GAS RELEASING ELEMENT

Satoru Ozaki, Ichigawa, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,774
Claims priority, application Japan, Jun. 26, 1978, 53-77240
Int. Cl.³ G21C 17/00, 3/10
U.S. Cl. 376—251 28 Claims



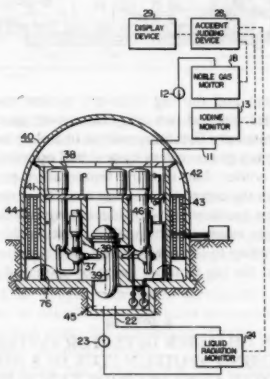
1. A tagging gas releasing element for insertion within a nuclear fuel rod, said tagging gas releasing element consisting essentially of an inorganic solid material having a tagging gas composed of at least one rare gas selected from the group consisting of helium, xenon, neon and krypton adsorbed on the surface region thereof so as to detect failure in a nuclear fuel rod, said tagging gas being released from said element and into the interior of said fuel rod by means of desorption under the high temperature operation conditions of a nuclear reactor so as to tag each fuel rod and detect failure of the fuel rod when the tagging gas leaks therefrom, said inorganic solid material containing the tagging gas being the sole source of the tagging gas.

4,495,142

MONITORING SYSTEM FOR MONITORING STATE OF NUCLEAR REACTOR CORE

Tadakazu Nakayama; Ryozo Tsuruoka, and Masaki Matsumoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,515
Claims priority, application Japan, Mar. 19, 1980, 55-35345
Int. Cl.³ G21C 17/00
U.S. Cl. 376—251 13 Claims



1. A monitoring system for monitoring the state of the core of a nuclear reactor, comprising: a first pipe communicated at its both ends with the gas layer in a nuclear reactor container housing a nuclear reactor vessel; gas transferring means provided in said first pipe; first means provided in said first pipe for measuring a level of the radioactivity of iodine; second means provided in said first pipe at the downstream side of said first means for measuring a level of the radioactivity of noble gas; a second pipe communicated at its both ends with a space which is to be filled with the coolant in the liquid state discharged out of said nuclear reactor vessel; means disposed in said second pipe for transferring said coolant in the liquid state; third means disposed in said second pipe for measuring a level of the radioactivity of iodine in the coolant in the liquid state; judging means for determining, upon receipt of the outputs from said first means, second means and third means, a condition of fuel rods in said nuclear reactor vessel; and means for displaying the condition of the fuel rods as determined by said judging means.

4,495,143

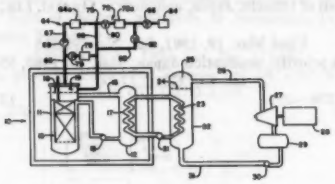
GAS TAGGING AND COVER GAS COMBINATION FOR NUCLEAR REACTOR

Kenny C. Gross, Lemont, Ill., and Matthew T. Laug, Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,462
Int. Cl.³ G21C 17/04
U.S. Cl. 376—251 8 Claims

1. In a nuclear reactor having a sealed vessel and a core therein holding fuel elements, a liquid metal coolant circulating through the core and over the fuel elements, and a cover gas confined in the vessel over the coolant, the combination of a cover gas cleanup system operable to purge the cover gas of

any fission gases such as xenon and krypton that may escape from the fuel element upon a leak developing in the fuel element cladding, fuel element identification means including the encasement in the different fuel elements of selected tag isotopes blended in unique combinations relative to one another and the cataloging of the uniquely tagged fuel elements according to their locations in the core, means including a tag gas recovery and analysis system connected downstream of and in series with the gas cover cleanup system operable to receive the purged cover gas discharged therefrom, the cover gas



cleanup system and the tag recovery system each having a cryogenic charcoal bed, whereby the cover gas cleanup system bed operates at a first temperature to isolate out the fission gases and the tag gas recovery system bed operates at a second temperature colder than the first temperature to recover the tag gases from the cover gas, the tag analysis system including the use of mass spectrometry for identifying the unique combinations of these isotopes and for thus locating the leaking fuel element according to the core catalog, and the cover gas being of helium and the tag isotopes being of neon and argon.

4,495,144

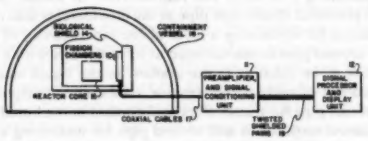
FISSION CHAMBER DETECTOR SYSTEM FOR MONITORING NEUTRON FLUX IN A NUCLEAR REACTOR OVER AN EXTRA WIDE RANGE, WITH HIGH SENSITIVITY IN A HOSTILE ENVIRONMENT

Clinton L. Lingren, San Diego, and James F. Miller, Encinitas, both of Calif., assignors to Gamma-Metrics, San Diego, Calif.

Filed Jul. 6, 1981, Ser. No. 280,335

Int. Cl.[3] **G21C** *17/00*

U.S. Cl. 376—255 **21 Claims**



1. A system for monitoring neutron flux in a nuclear reactor having a core located within a biological shield within a containment vessel, comprising

a plurality of fission chamber detectors located adjacent the reactor core inside the biological shield for providing neutron signal pulses in response to the detection of neutrons;

a preamplifier and signal conditioning unit located outside the containment vessel for amplifying and conditioning said neutron signal pulses; and

coaxial cables for conducting said neutron signal pulses from the fission chamber detectors to the preamplifier and signal conditioning unit, wherein each coaxial cable comprises

a center conductor;

a coaxial high temperature insulating layer closely covering the center conductor;

a coaxial dielectric layer closely covering the insulating layer, said dielectric layer being resistant to nuclear radiation damage; and

a coaxial conductive solid sheath layer closely covering the dielectric layer; and

a coaxial outer insulating layer closely covering the solid sheath layer, said outer layer being resistant to nuclear radiation damage.

4,495,145

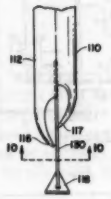
SPHERICAL NUCLEAR FUEL LOADING PROBE

Aime A. Gehri, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Dec. 7, 1981, Ser. No. 327,816

Int. Cl.[3] **G21C** *5/36;* **B67D** *5/08;* **G21G** *13/00;* **G01G** *17/04*

U.S. Cl. 376—261 **6 Claims**



1. A loading probe for loading spherical nuclear fuel of three different diameters into a fuel rod comprising:

(a) funnel means for receiving said spherical nuclear fuel, said funnel means maintaining a separation of said spherical fuel of different diameters;

(b) tubing means corresponding to each of said spherical nuclear fuel diameters, said tubing means of sufficient length so that said tubing means extends about the length of said fuel rod in the load portion;

(c) valve means for releasably containing said fuel spheres within said funnel means, said valve means able to release said fuel spheres to said tubing means;

(d) gate means between said valve means and said tubing means for regulating the rate of flow of each said spherical fuel as it passes from said funnel means through said valve means into the end of said tubing means away from said fuel rod; and

(e) deflector means attached to said end of said tubing means within said fuel rod for mixing said fuel as it emerges from said tubing means;

4,495,146

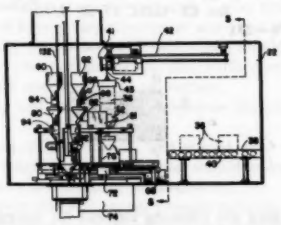
SPHERICAL NUCLEAR FUEL LOADING SYSTEM

Aime A. Gheri, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Dec. 7, 1981, Ser. No. 327,817

Int. Cl.[3] **G21C** *5/36;* **B67D** *5/08;* **G21G** *17/04, 13/00*

U.S. Cl. 376—261 **9 Claims**



1. A system for the loading of substantially spherical nuclear fuel into a vertically maintained fuel rod comprising:

(a) a main house having an inert atmosphere and having a sealable opening to receive three quantities of fuel spheres, each quantity having a different diameter for loading into

fuel rods, said fuel rods having one open end within said housing;

(b) a weighing station system for receiving said spheres and separating each of said three quantities of spheres into predetermined quantities, said weighing station including a balance means for weighing said nuclear fuel spheres;

(c) a means for transferring said fuel spheres after entering said main housing to said weighing station within said main housing;

(d) a fuel rod support system for supporting said fuel rod in an upright position;

(e) a means for feeding said predetermined quantities of said fuel spheres in a controlled manner into said fuel rod so as to randomly mix said fuel spheres;

(f) a means for raising and lowering said feeding means,

(g) a means for transferring each of said predetermined quantities of said fuel spheres to a corresponding hopper of said feeding means for subsequent loading into said fuel rod;

(h) a means for maintaining said fuel rod in sealing engagement with said main housing in order to preserve said inert atmosphere.

4,495,147

HEAT-RETARDING CLOSURE SYSTEM FOR PRESSURE RELIEF OPENINGS OF PARTITIONS, IN NUCLEAR REACTOR BUILDINGS

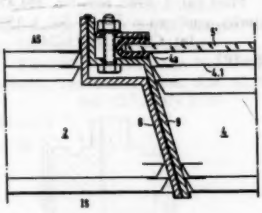
Wolfgang-Peter Fricker, Freinsheim; Manfred Scholz; Heinrich Bauche, both of Erlangen, and Bernd Gollasch, Nürnberg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Müheim an der Ruhr and Grünzweig & Hartmann Montage GmbH, Ludwigshafen, both of, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,507

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002335

Int. Cl.³ G21C *11/08*

U.S. Cl. 376—283 **9 Claims**



1. Heat retarding closure system, for partitions having pressure relief openings formed therein, in nuclear reactor buildings where main coolant nozzles of a reactor pressure vessel penetrate a biological shield, comprising blowout inserts in the form of closure elements having a side facing the reactor, a side facing away from the reactor and anchors for holding said closure elements, said blowout inserts being pushable out of said anchors by an overpressure in a given pressure difference direction on said side facing the reactor, and an outer sealing blowout skin, said blowout inserts being in the form of heat-retarding cassette inserts having a front surface at said side facing away from the reactor with a peripheral shearing edge formed thereon resting against said blowout skin, said blowout skin having a given thickness in said given pressure difference direction, said blowout skin being sheared off by said shearing edge of said cassette insert and said cassette insert being pushed out of said anchors when a given pressure difference is reached, said anchors being in the form of a partition seat having an outside and an inside and said partition seat and blowout insert being widened from the inside to the outside.

4,495,148

PROCESS AND APPARATUS FOR REMOVING COMBUSTIBLE LUBRICANTS FROM SINTERABLE WORKPIECES

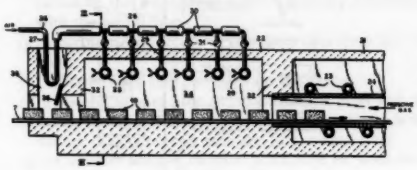
Reiner Sarnes, Gerhart Hauptnannstr. 16, D-7302 Ostfildern 2, and Emil Heinrich, Bruckner Str. 1, D-7054 Korb, both of Fed. Rep. of Germany

Filed Jan. 11, 1983, Ser. No. 457,145

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200582

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—57 **14 Claims**



1. A process for removing a combustible lubricant from workpieces of pressed metallic particles advancing through a preheating chamber into a muffle furnace for sintering, comprising the steps of:

(a) blowing an at least partly combustible protective gas of low oxygen content through said preheating chamber in counterflow to the advancing workpieces, said protective gas also traversing said muffle furnace to envelop the workpieces being sintered;

(b) heating an oxygen-rich gas to an elevated temperature sufficient to volatilize the lubricant permeating the workpieces which enter the preheating chamber at a substantially lower temperature; and

(c) admitting the hot oxygen-rich gas to said preheating chamber at locations spaced along the path of the workpieces for admixture with said protective gas and resulting ignition of combustible constituents of the latter and of the evaporating lubricant whereby the oxygen content of the mixture is progressively depleted on the way from the entrance end to the exit end of the preheating chamber to an extent preventing oxidation of the workpieces heated up along said path.

4,495,149

OPTICAL-TYPE AUTOMATIC ANALYZING AND MEASURING APPARATUS

Toyotaro Iwata; Kunio Nakajima, and Hiroyuki Otsuki, all of Hyogo, Japan, assignors to Toa Medical Electronic Co., Ltd., Hyogo, Japan

Filed Sep. 16, 1982, Ser. No. 419,038

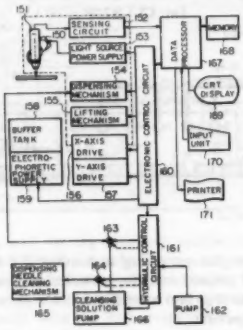
Claims priority, application Japan, Sep. 18, 1981, 56-147165

Int. Cl.³ G01N *35/06*

U.S. Cl. 422—65 **15 Claims**

1. An optical-type automatic analyzing and measuring apparatus which comprises an X-Y drive mechanism, and optics/-dispensing mechanism having an optical system and dispensing means including a dispensing needle, a dispensing needle cleaning mechanism, a lifting mechanism having a lifter adapted to lift and lower an object remote of said dispensing needle, and a reagent/sample holder accommodating reagents and samples, wherein said optics/dispensing mechanism and said lifting mechanism are mounted on the same movable structure and transported together in two dimensions by said X-Y drive mechanism, the optical system of said optics/dispensing mechanism, the dispensing needle of said dispensing means and the lifter of said lifting mechanism are located spaced apart from one another by predetermined distances so as not to impede the operation of one another, said dispensing means is adapted to take up a predetermined quantity of a reagent or sample from said reagent/sample holder and dispense the same in pre-

scribed quantities at each of a number of predetermined positions to allow reagents and samples to react, said optical system determines the positions of said mechanisms and said holder in a two-dimensional plane by confirming the operating position of said needle or lifting mechanism spaced apart from each other by a predetermined distance, said optical system being adapted to read the optical characteristics of a sample following a reaction with a reagent and to generate a detection signal for providing the measured results, said optical system includes



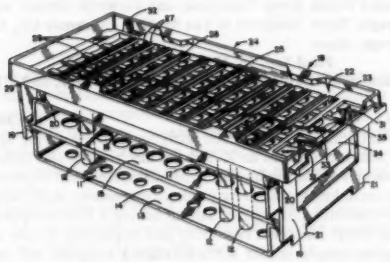
a lamp housing, a light condenser, light guiding optical fibers, an irradiation lens housing, an irradiation lens, an objective lens and a light receiving element, and said rinsing needle cleaning mechanism passes a rinsing liquid and air through the interior of the dispensing needle before said needle takes up a reagent or sample, and ejects a rinsing liquid and air toward the outer surface of the dispensing needle after said needle takes up a reagent or sample, whereby the dispensing needle is rinsed and blown dry.

4,495,150

MULTIPLE OBJECT CAPTURING AND PROCESSING DEVICE

William E. Cook, Vista; Morton A. Vodian, Escondido, and Otto Haunold, Carlsbad, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 25, 1983, Ser. No. 516,486
Int. Cl.³ B01L 9/00; B01D 35/02; B08B 3/00
U.S. Cl. 422—99 **9 Claims**



1. In a testing apparatus employing a plurality of test tubes with at least one solid object insertable into each test tube, said apparatus including a rack for maintaining said test tubes in vertical alignment and a means for retaining said test tubes in said rack when said rack is inverted, the improvement comprising:

said retaining means including means defining a first plurality of holes in alignment with said test tubes, said first holes sized to allow said objects to pass through said retaining means;

a capture slide movably mounted adjacent said retaining means, said capture slide including means defining a second plurality of holes to allow said object to pass therethrough, said capture slide movable to a first position in which said second holes in said capture slide are not in alignment with said first holes in said retaining means and a second position in which said second holes in said capture slide are in alignment with said first holes in said retaining means;

a containing slide, movably mounted adjacent said capture slide, said containing slide including means defining a first plurality of spaces to allow said object to pass therethrough, said containing slide movable to a first position in which said first spaces in said containing slide are not in alignment with said first holes in said retaining means and a second position in which said first spaces in said containing slide are in alignment with said first holes in said retaining means; and

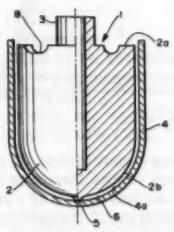
whereby, when said capture slide is in said first position and said containing slide is in said second position, then said object is contained in said retaining means by the cooperation of said containing slide and said retaining means.

4,495,151

ELEMENT FOR IMMUNOASSAY

Kunio Ohyama; Nobuaki Nakagawa, and Susumu Watanabe, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 1, 1982, Ser. No. 394,473
Claims priority, application Japan, Jul. 1, 1981, 56-101365
Int. Cl.³ G01N 33/54
U.S. Cl. 422—102 **8 Claims**



1. In apparatus for performing an immunoassay, comprising in combination a reaction tube closed at its bottom, and in the reaction tube a molded element having on its surface material having specific binding ability for a component in a liquid specimen to be assayed; the improvement in which the shape of the surface of the element adjacent the interior surface of the tube is the complement of the shape of the interior surface of the tube, and spacer means on the element in contact with the interior surface of the tube, said spacer means holding the element in such position in the tube that said surfaces of complementary shape are spaced from each other a small but constant distance thereby to receive between said surfaces of complementary shape a thin layer of constant thickness of a liquid specimen for immunoassay.

4,495,152

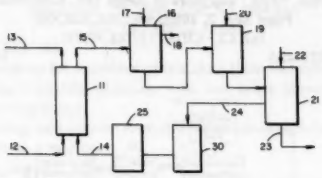
LEACH APPARATUS INCLUDING MEANS TO PROTECT ION EXCHANGE RESIN

Tsoung-yuan Yan, Philadelphia, Pa., and Raymond L. Lozano, Thoreau, N. Mex., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 963,662, Nov. 24, 1978, Pat. No. 4,298,578. This application Aug. 28, 1981, Ser. No. 297,303

Int. Cl.³ F04C *29/00*

U.S. Cl. 422—159 **5 Claims**



1. In an apparatus for recovering values including means supplying a leach solution containing said values to at least one column filled with ionexchange resin, means for supplying eluant through said column to desorb said values from said resins, means for precipitating said values from said eluate upon addition of hydrogen peroxide, and means for making up fresh eluant from the decant solution which exists after said precipitation of said values, the improvement comprising:

a chamber positioned between said means for precipitating said values and said means for making up fresh eluant through which said decant solution flows; and

catalytic material in said chamber decomposing substantially all of any hydrogen peroxide that may be present in said decant solution into water and oxygen.

4,495,153

CATALYTIC CONVERTER FOR TREATING ENGINE EXHAUST GASES

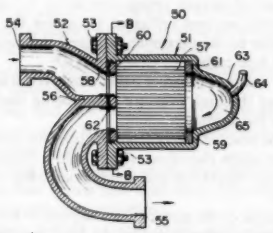
Minoru Midorikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 3, 1982, Ser. No. 374,413

Claims priority, application Japan, Jun. 12, 1981, 56-85491

Int. Cl.³ F01N *3/10*

U.S. Cl. 422—171 **5 Claims**



1. A catalytic converter for treating engine exhaust gas, comprising:

(a) a carrier having opposite first and second ends and being formed with a plurality of passageways extending from the first to the second end of the carrier, the passageways having opposite first and second ends respectively, the first ends of the passageways being at the first end of the carrier, the second ends of the passageways being at the second end of the carrier;

(b) a casing housing the carrier in such a manner that the casing and the second end of the carrier define a space, inside the casing, through which the second ends of the passageways communicate in common;

(c) an inlet tube connected to the casing in such a manner as to directly communicate with a part of the first ends of the passageways for supplying the engine exhaust gas thereto;

(d) an outlet tube connected to the casing in such a manner as to directly communicate with another part of the first ends of the passageways;

(e) first catalyst carried on a part of the carrier including the passageways which directly communicate with the inlet tube; and

(f) second catalyst carried on another part of the carrier including the passageways which directly communicate with the outlet tube;

(g) a partition wall separating the inlet tube from the output tube;

(h) a first inward step provided on the casing;

(i) a second inward step provided on the inlet and outlet tubes, the second inward step being operative to hold the carrier in cooperation with the first inward step;

(j) an annular bumper member positioned between the carrier and the second inward step;

(k) a diametrical bumper member contacting the carrier and extending diametrically with respect to the annular bumper member; and

(l) a retainer holding the diametrical bumper member and the partition wall and thereby securing the diametrical bumper member to the partition wall, the retainer and the diametrical bumper member cooperating to prevent direct communication between the parts of the first ends of the passageways, the retainer having an annular portion and a diametrical portion extending diametrically with respect to the annular portion, the annular portion being positioned between the carrier and the second inward step and having a groove receiving the annular bumper member, the diametrical portion having oppositely directed grooves receiving the diametrical bumper member and the partition wall respectively;

whereby the engine exhaust gas flows past the inlet tube, a part of the passageways relating to the first catalyst, the space inside the casing, another part of the passageways relating to the second catalyst, and the outlet tube, in that order.

4,495,154

FUEL REFORMER

Larry G. Christner, Sandy Hook, and Jen-Jung Fan, Danbury, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed May 28, 1982, Ser. No. 382,915

Int. Cl.³ B01J *8/02*; F28D *21/00*

U.S. Cl. 422—203 **6 Claims**

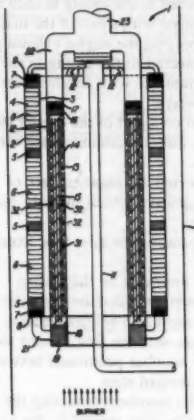
1. A reformer for reforming a fuel comprising:

a member having an elongated chamber;

a catalyst disposed within said chamber along the length of said chamber;

a heat conductive means disposed within said chamber along the length of said chamber, said heat conductive means comprising one or more elongated, thin, continuous pieces of metallic wire, each piece of metallic wire being in said catalyst and extending continuously over the length of said chamber over which said catalyst extends, whereby

heat transferred to said catalyst in a direction transverse to the length of said chamber is transferred by said metallic



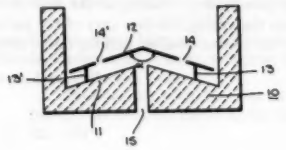
wire through said catalyst along the length of said chamber.

4,495,155

MODIFIED CRUCIBLE FOR THE PENDANT DROP METHOD OF CRYSTALLIZATION

Jean Ricard, Grenoble, and Charles Excoffon, Les Peillets, both of France, assignors to Circeram, Paris, France

Filed May 23, 1983, Ser. No. 496,893
Claims priority, application France, Jun. 11, 1982, 82 10174
Int. Cl.³ C30B *15/08, 15/10*
U.S. Cl. 422—248 **4 Claims**



1. A crucible for use in the continuous preparation of single crystals having a desired crystal orientation or for depositing crystalline material in a thin film on a substrate by the pendant drop growth method and comprising in its lower region one or more capillary bores having a height equal to or greater than the retention height in the capillary of the molten material used to produce the single crystals or thin film at a temperature and pressure desired, characterized in that the bottom of the crucible is capped by a baffle plate supported on feet resting on the bottom of the crucible, the baffle plate not extending to the inside edges of the crucible.

4,495,156

PRIMARY SYSTEM

Stanley E. Rohowetz, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 5, 1983, Ser. No. 455,649
Int. Cl.³ B05D *1/36, 7/00, 3/02*
U.S. Cl. 427—384 **12 Claims**

1. A method for priming metal substrates including the steps of:

(a) coating the surface of the metal substrate with an aqueous primer system comprising an organic titanium chelate dissolved in or admixed with water or a water-solvent mixture.

(b) drying the coating to produce a titanate film on the metal surface; and

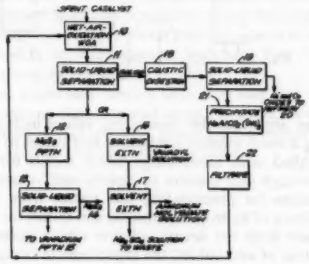
(c) applying a lubricant over said titanate coated surface.

4,495,157

RECOVERY OF METAL VALUES FROM SPENT HYDRODESULFURIZATION CATALYSTS

Roger F. Sebenik; Pablo P. LaValle, both of Ann Arbor, Mich.; John M. Laferty, Wheat Ridge, Colo., and William A. May, Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Sep. 2, 1983, Ser. No. 528,884
Int. Cl.³ C01G *31/00, 39/00*
U.S. Cl. 423—54 **10 Claims**



1. A process of recovering metal values from spent hydrodesulfurization catalyst which comprises:

forming in a pressure vessel an aqueous slurry of finely divided spent catalyst and sodium carbonate;

the spent catalyst containing by weight about 2 to 10% Mo, up to about 12% V, about 0.5 to 4% Co, up to about 10% Ni, occluded oil, coke, sulfide sulfur and the balance essentially alumina;

the amount of sodium carbonate being at least sufficient to convert Mo and any V present to soluble Na_2MoO_4 and $NaVO_3$ and to neutralize SO_3 produced during oxidation, the amount of sodium carbonate being at least that required stoichiometrically;

heating said slurry in the presence of an oxygen-containing gas to a temperature of about 200° C. to 350° C. and a pressure of about 800 psig to 2500 psig for a time at least sufficient to solubilize said Mo and any V present;

the amount of oxygen being over about 1.1 times the stoichiometric amount sufficient to oxidize the metal values and sulfur to the maximum oxidized state and oxidize the oil and free carbon to CO_2 and H_2O;

the lower range of pressure being employed where oxygen is used and the high pressure range being used when air is used as the oxidation agent;

removing the reacted slurry from the pressure vessel and separating the solids therefrom to provide a filtrate containing $NaVO_3$ and Na_2MoO_4 and solids containing alumina, NiO and CoO;

recovering each of the metal values Mo and V from the filtrate solution by selectively extracting said vanadium using an organic solvent containing a quaternary amine at a pH of about 8.5 to 9.5 and provide an aqueous raffinate containing said molybdenum which is extracted therefrom using an organic solvent containing a secondary or tertiary amine at a pH of about 2 to 4;

or, in the alternative, selectively precipitating said Mo value from the filtrate solution as MoS_3 by adjusting the pH to less than about 1 by the addition of H_2S to provide a filtrate containing V which is recovered as a hydrated oxide by neutralizing the solution with a neutralizing agent selected from the group consisting of NaOH and Na_2CO_3 or precipi-

tated as a red cake by first oxidizing the vanadium to its higher valance and then adjusting the pH thereof with said neutralizing agent.

4,495,158

PROCESS FOR THE RECOVERY OF TANTALUM VALUES

Joseph E. Ritsko, and Howard L. Acla, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,846
Int. Cl.³ C01G 35/00
U.S. Cl. 423—65 **13 Claims**

1. A process for recovery of tantalum from an impure source containing tungsten, titanium, iron, and other impurities, said process comprising:

(a) mixing said impure source with an alkali metal carbonate to form a mixture;

(b) drying said mixture,

(c) heating the dried mixture at a sufficient temperature and for a sufficient time to convert said tungsten impurities to a water soluble form and form a resulting mixture,

(d) leaching the resulting mixture with water to form a two phase system in which the liquid phase contains tungsten values and the solid phase contains the tantalum values and other impurities,

(e) separating said liquid phase containing the tungsten values from said solid phase containing the tantalum values and other impurities,

(f) digesting said solid phase containing the tantalum values and other impurities in a hydrochloric acid solution of sufficient strength, at a sufficient temperature and for a sufficient time to solubilize iron and a portion of the titanium impurities and form a liquid phase comprising iron and titanium,

(g) separating the liquid phase comprising iron and titanium from the resulting solid phase containing the tantalum values and depleted titanium values,

(h) contacting said resulting solid phase with an aqueous solution of hydrofluoric acid of sufficient strength to solubilize said tantalum values and titanium values,

(i) separating the resulting hydrofluoric acid solution containing said tantalum values and titanium values from any insolubles,

(j) adjusting the pH of said hydrofluoric acid solution containing said tantalum values and said titanium values from about 6.0 to about 8.0 with a base to form a first tantalum precipitate whereby a major portion of said titanium values remain in the resulting solution,

(k) separating the first tantalum precipitate from said resulting first solution,

(l) dissolving said first tantalum precipitate in an aqueous solution of oxalic acid of sufficient strength to solubilize the tantalum values,

(m) separating the resulting oxalic acid solution containing the tantalum values and said minor portion of titanium from the resulting insolubles,

(n) adjusting the pH of said oxalic acid solution to from about 6.5 to about 7.0 with a base to form a second tantalum precipitate and a second solution,

(o) separating said second tantalum precipitate from the second solution,

(p) dissolving said second tantalum precipitate in hydrochloric acid, and

(q) digesting the resulting hydrochloric acid solution containing tantalum values at a sufficient temperature and for a sufficient time to form a two phase system including a solid phase consisting of a third tantalum precipitate of high purity.

4,495,159

EXTRACTION OF ARSENIC IN SOLUTION IN LIQUORS CONTAINING ALKALI METAL CARBONATE, SULPHATE AND POSSIBLY HYDROXIDE, AND AT LEAST ONE OF THE METALS VANADIUM, URANIUM AND MOLYBDENUM

Pierre Maurel, Aix-en-Provence, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Jul. 16, 1982, Ser. No. 398,832
Claims priority, application France, Jul. 29, 1981, 81 15064
Int. Cl.³ C01B 27/00, 29/00
U.S. Cl. 423—87 **13 Claims**

1. A process for extracting arsenic by means of a magnesium compound from aqueous solution to be purified, resulting from the alkaline attack on an ore, and extraction of the useful elements which are solubilized in the attack operation, which aqueous solution contains alkali metal carbonate, sulphate, hydroxide or hydrogen carbonate and may also contain at least one of the metals vanadium, uranium and molybdenum, said process comprising treating the solution with a magnesium compound at a temperature below the boiling point temperature for the solution to precipitate magnesium arsenate, removing the precipitated magnesium arsenate from the remaining liquor, adding lime to the liquor to convert carbonates into alkali metakl hydroxides to produce a first alkali metal hydroxide-enriched liquor and a first precipitate containing calcium carbonate, separating the first precipitate containing calcium carbonate, from the first alkali metal hydroxide-enriched liquor, and concentrating the combined liquor to produce a second precipitate containing alkali metal sulphate and a second alkali metal hydroxide-enriched liquor.

4,495,160

REMOVAL AND RECOVERY OF MAGNESIUM, STRONTIUM AND BARIUM FROM BRINES

Truman P. Moote, and Robert L. Reed, both of Tulsa, Okla., assignors to The Standard Oil Company, Chicago, Ill.

Filed Mar. 28, 1983, Ser. No. 479,409
Int. Cl.³ C01F 1/00, 5/00, 11/00
U.S. Cl. 423—158 **32 Claims**

1. A process for sequentially removing magnesium and strontium from brines, said process comprising:

(a) precipitating magnesium hydroxide from a brine at temperatures in the range from above 80° C. to about the boiling point of said brine to produce a mother liquor and magnesium hydroxide precipitate;

(b) separating said mother liquor from said magnesium hydroxide precipitate; then

(c) cooling said mother liquor to effect precipitation of strontium hydroxide; and

(d) separating strontium hydroxide precipitate from the mother liquor.

4,495,161

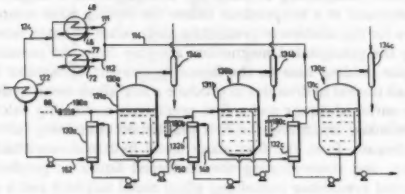
ENERGY RECOVERY METHOD AND SYSTEM FOR COMBINED SULPHURIC ACID AND PHOSPHORIC ACID MANUFACTURING PLANT

Gordon M. Cameron, Willowdale, and John V. Orlando, Scarborough, both of Canada, assignors to C-I-L Inc., North York, Canada

Continuation of Ser. No. 473,188, Feb. 22, 1983, abandoned, which is a continuation of Ser. No. 307,088, Sep. 30, 1981, abandoned. This application Apr. 16, 1984, Ser. No. 599,606
Claims priority, application Canada, Apr. 10, 1981, 375178
Int. Cl.³ C01B 25/16, 17/98, 17/48
U.S. Cl. 423—167 **11 Claims**

1. In a process for the manufacture of concentrated phosphoric acid in which sulphuric acid and phosphate rock are reacted to produce a slurry of calcium sulphate in dilute phosphoric acid, the slurry being filtered to produce a dilute stream of phosphoric acid and the phosphoric acid then being concentrated by evaporation of excess water in at least first and sec-

ond evaporator stages, and in which said sulphuric acid is produced in a sulphuric acid plant physically adjacent the phosphoric acid plant, said sulphuric acid plant having means for producing a stream of gas containing oxygen, means for reacting said stream of gas to produce sulphur dioxide therein, a converter to convert said sulphur dioxide to sulphur trioxide, drying means for absorbing, in a first portion of sulphuric acid, moisture from said gas stream upstream of said converter, absorbing means for absorbing in a second portion of sulphuric acid, sulphur trioxide from said converter, said first and second portions of sulphuric acid having temperatures in the range from approximately 180° F. to 230° F. before cooling, cooling means for cooling at least said second sulphuric acid portion, and means for producing high quality steam, the improvement comprising the steps of recovering in a heat recovery fluid heat from said cooling means, and using said heat as essentially the sole source of heat to evaporate water from the phosphoric acid in at least said first and second evaporator stages by flowing said heat recovery fluid first to said second evaporator



stage and passing it in countercurrent flow with said phosphoric acid in a heat exchanger of said second evaporator stage to operate said second evaporator stage at a selected temperature, and then flowing said heat recovery fluid from said second evaporator stage to said first evaporator stage and passing it in countercurrent flow with said phosphoric acid in a heat exchanger of said first evaporator stage to operate said first evaporation stage at a temperature substantially lower than said selected temperature, maintaining the phosphoric acid in said first evaporator stage at a concentration which does not exceed approximately 40% P_2O_5, flowing phosphoric acid from said first evaporator stage to said second evaporator stage and maintaining the phosphoric acid in said second evaporator stage at a concentration which substantially exceeds that in said first evaporator stage operating said first evaporator stage at a very low pressure by a barometric condenser and operating said second evaporator stage at essentially the same very low pressure as said first evaporator stage to enable said evaporation, thereby allowing said steam to be used for other purposes.

4,495,162

PREPARATION OF A CALCIUM SULFATE ANHYDRITE MATERIAL OF LOW CHLORIDE CONTENT

Ebbe S. Jons, Vaerlose, and Klaus E. Gude, Vedbaek, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Aug. 31, 1982, Ser. No. 413,417

Claims priority, application Denmark, Sep. 4, 1981, 3912/81; Sep. 8, 1981, 3978/81; Nov. 11, 1981, 4992/81; Mar. 16, 1982, 1165/82; May 28, 1982, 2430/82

Int. Cl.³ C04B *11/02, 11/00;* C01F *11/46*

U.S. Cl. 423—171 **17 Claims**

1. A process for preparing a calcium sulfate anhydrite material of low chloride content from a chloride containing spent absorbent resulting from flue gas desulfurization by means of a basic calcium compound containing absorbent, said spent absorbent containing an amount of chloride equivalent to at least about 0.5 weight percent calcium chloride comprising the steps of

(a) oxidizing calcium sulfite in said spent absorbent into calcium sulfate,

(b) ensuring the presence of sufficient fly ash in intimate admixture with the spent absorbent for substantially reducing the chloride content of the spent absorbent, said fly ash resulting from the combustion of solid fuel,

(c) heating the fly ash containing oxidized spent absorbent at a temperature of 600°–950° C.,

(d) contacting the fly ash containing oxidized spent absorbent with water vapor during said heating, and

(e) removing HCl-gas driven off by said heating.

4,495,163

FLUIDIZED BED SULFUR DIOXIDE REMOVAL

Xuan T. Nguyen, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 352,176, Feb. 25, 1982, abandoned. This application Jan. 11, 1983, Ser. No. 457,180

Int. Cl.³ B01J *8/00;* C01B *17/00*

U.S. Cl. 423—244 **8 Claims**

1. In a method of using fluidized bed for stripping SO_2 from gases by providing a bed of pellets, passing SO_2 containing gases through said bed to fluidize said pellets and to form a fluidized bed of said pellets, injecting into said bed at least one aqueous chemical selected from the class consisting of alkali and alkaline earth material reactive with sulfur dioxide to form a non-volatile compound, reacting at least a portion of said SO_2 with said chemical in said fluidized bed to form a combined product, combining said combined product with previously formed product and to discard a portion of the improvement comprising adjusting the concentration and feed rate of said reaction chemical as to exhaust gases from said bed at a temperature as low as possible below 115° C. but high enough and above 40° C. to prevent the condensation of the moisture present in the gas stream, thereby the water of the aqueous reaction chemical being not spray-dired by said SO_2 containing gases but allowing prolongation of the scrubbing time between said reaction chemical and said SO_2 containing gases, to exhaust gages from said bed substantially free of SO_2 and thus eliminating the need of auxiliary scrubbing elements that are typically used in association wiht fluidized bed SO_2 removal.

4,495,164

PROCESS FOR PRODUCING ACICULAR MAGNETITE OR ACICULAR MAGHEMITE

Yosiro Okuda, and Toshiharu Harada, both of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Continuation-in-part of Ser. No. 265,015, May 19, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,661

Claims priority, application Japan, May 30, 1980, 55-73512; May 31, 1980, 55-73511

Int. Cl.³ C01G *49/06, 49/08*

U.S. Cl. 423—266 **3 Claims**

1. A process for preparing acicular magnetite of high axial ratio, which comprises

(a) providing a suspension of iron (II) hydroxide in aqueous sodium hydroxide at a pH of at least 11 and containing 0.5 to 7.0 atom % magnesium based on the amount of the iron (II) hydroxide in the suspension and calculated as the ratio of Mg to Fe(II), said magnesium being provided as its sulfate or chloride;

(b) oxidizing said suspension with an oxygen-containing gas to form acicular iron (III) oxide hydroxide in the form of particles having a long axis length of 0.3 to 2.0 μm and an axial ratio of more than 20:1, said acicular iron (III) oxide hydroxide exhibiting a higher axial ratio than acicular iron (III) oxide hydroxide prepared as above absent said magnesium sulfate or magnesium chloride; and

(c) reducing said acicular iron (III) oxide hydroxide to acicular magnetite having the same particle shape.

4,495,165

METHOD OF PURIFICATION OF PHOSPHORIC ACID

Guillermo R. Gurza, Rio Balsa No. 62, Colonia Cuauhtemoc, Mexico

Filed Oct. 3, 1983, Ser. No. 538,138
Int. Cl.[3] C01B 25/16
U.S. Cl. 423—321 R 24 Claims

1. A method for purifying phosphoric acid comprising the steps of:

mixing a porous carbonaceous material with phosphoric acid having impurities therewith;

heating and agitating the mixture of carbonaceous material and phosphoric acid at a temperature between about 100° C. and about 300° C. so as to affect dehydration of the mixture; and then thereafter heating said mixture of carbonaceous material and phosphoric acid at a temperature between about 200° C. and about 1000° C., and

after said heating and agitating, then washing said mixture with a solvent to dissolve the phosphoric acid which has thus been purified.

4,495,166

SYNTHESIS OF ZSM-5 UTILIZING A MIXTURE OF QUATERNARY AMMONIUM IONS AND AMINES

Robert B. Calvert, Plainsboro, and Louis D. Rollmann, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,575
Int. Cl.[3] C01B 33/28
U.S. Cl. 423—329 5 Claims

1. In a process of manufacturing zeolite ZSM-5 which process comprises crystallizing an aqueous forming solution comprising a source of silica and a nitrogenous template and recovering said zeolite ZSM-5, the improvement which comprises utilizing as said nitrogenous template both a tetrapropylammonium salt and an amine having the formula $R_1R_2R_3N$ wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl of from 2–8 carbon atoms and R_3 is a lower alkyl of from 2–8 carbon atoms wherein the molar ratio of tetrapropylammonium salt to silica ranges from about 0.001 to 0.04, wherein the molar ratio of said amine to silica ranges from about 0.02 to about 0.18 and wherein the molar ratio of both the tetrapropylammonium salt and the amine to silica ranges from about 0.02 to about 0.22.

4,495,167

PRECIPITATED SILICAS HAVING HIGH STRUCTURE AND PROCESS FOR THEIR PREPARATION

Peter Nauroth, Wesseling; Heinz Esch, Wesseling-Urfeld, and Günter Turk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,633
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144299
Int. Cl.[3] C01B 33/18
U.S. Cl. 423—339 10 Claims

1. A precipitated silica which is one having the following physical-chemical characteristics:

(1)	BET-surface area	m^2/g	400–600
	DBP-number	%	340–380
	Bulk density	g/l	180–220
	Sieve residue >63 mμ	Wt. %	25–60, or
(2)	BET-surface area	m^2/g	400–600
	DBP-number	%	320–360
	Bulk density	g/l	75–120
	Sieve residue >63 mμ	Wt. %	<0.1, or
(3)	BET-surface area	m^2/g	400–600
	DBP-number	%	310–360
	Bulk density	g/l	35–70
	Sieve residue >63 mμ	Wt. %	<0.01.

4,495,168

AEROSOL GEL

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 22, 1983, Ser. No. 525,148
Int. Cl.[3] A61K 7/00, 7/15; A61L 9/04
U.S. Cl. 424—45 15 Claims

1. A pressurized composition in an aerosol container and adapted to form a spray upon release of pressure therefrom which composition is a liquid inside the container and forms a gel on contact with living tissue comprising by weight about 35 to 80 percent water, 10 to 25 percent polyoxyethylene-polyoxybutylene copolymer of the formula:

$$Y[(C_4H_8O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxybutylene groups is from about 1000 to 20,000; and the value of m is such that the oxyethylene groups constitute about 60 to 90 percent of the total weight of the compound, and about 3 to 50 percent propellant which is a solvent for the composition in said container or propellant which is not a solvent for said composition plus about 1 to 10 percent of a non-propellant volatile solvent.

15. An apparatus for treating skin comprising an aerosol container adapted to hold a material under pressure, a gel composition provided inside said container which is liquid when under the pressure normally found inside an aerosol container and which gels on contact with living skin at atmospheric pressure, a valve adapted to close off or release the liquid under pressure in the form of a spray, said gel composition comprising by weight abut 35 to 80 percent water, and 10 to 25 percent polyoxethylene-polyoxybutylene copolymer of the formula:

$$Y[(C_4H_8O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxybutylene groups is from about 1000 to 20,000; and the value of m is such that the oxyethylene groups constitute about 60 to 90 percent of the total weight of the compound, and about 3 to 50 percent propellant which is a solvent for the composition in said container or propellant which is not a solvent for said composition plus about 1 to 10 percent of a non-propellant volatile solvent.

4,495,169

AEROSOL GEL SHAVING CREAM

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 22, 1983, Ser. No. 525,147
Int. Cl.[3] A61K 7/00, 7/15; A61L 9/04
U.S. Cl. 424—47 19 Claims

1. An aerosol shave cream composition comprising by weight about 35 to 85 percent water, about 1 to 10 percent volatile solvent, about 3 to 50 percent propellant and about 10 to 25 percent of a polyoxyethylene-polyoxypropylene copolymer of the formula:

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxypropylene groups is from about 2250 to 7500; and the value of m is such that the oxyethylene

groups constitute about 45 to 90 percent by weight of the compound and wherein the water/copolymer weight ratio is less than about 4.5:1.

16. An apparatus for applying shaving cream to the skin comprising an aerosol container adapted to hold a material under pressure, a gel composition provided inside said container which is liquid when under the pressure normally found inside an aerosol container and which gels on contact with living skin, a valve adapted to close off or release the liquid under pressure in the form of a spray, said gel composition comprising by weight about 35 to 85 percent water, about 1 to 10 percent volatile solvent, about 3 to 50 percent of a propellant and about 10 to 25 percent polyoxyethylene-polyoxypropylene copolymer of the formula:

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxypropylene groups is from about 2250 to 7500; and the value of m is such that the oxyethylene groups constitute about 45 to 90 percent by weight of the compound and wherein the water/copolymer ratio is less than about 4.5:1.

4,495,170

SWEETENING AGENTS CONTAINING CHLORODEOXYSUGAR

Pamela K. Beyts, and Zdenek Latymer, both of Reading, England, assignors to Tate & Lyle Public Limited Company, England

Filed Apr. 22, 1982, Ser. No. 370,967

Claims priority, application United Kingdom, Apr. 29, 1981, 8113153

Int. Cl.³ A61K *31/70*; C07H *15/24*

U.S. Cl. 424—48 **14 Claims**

1. A sweet composition comprising a synergistic mixture of, at least one sweetening agent with an associated bitter taste selected from the group consisting of saccharin, stevioside and acesulpham K, and at least one sweet chlorodeoxysugar sweetener selected from the group consisting of chlorodeoxysucrose and chlorodeoxygalactosucrose.

4,495,171

PREPARATION FOR TREATING GUM DISEASE

Snejana G. Parisheva, 15 Vicora Linkway, Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 438,208, Nov. 1, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 591,905

Int. Cl.³ A61K *7/26, 35/78*

U.S. Cl. 424—58 **7 Claims**

1. A preparation for treating pyorrhea and other gum diseases which result in symptoms of swollen, bleeding, sensitive, shrunken or receding gums, comprising a mixture of from 10 to 90 percent by volume dry powdered alum and from 90 to 10 percent by volume dry powdered cloves.

4,495,172

NAIL COATING

Jan A. Orlowski, Altadena; David V. Butler, West Covina, and Patrick D. Kidd, Sierra Madre, all of Calif., assignors to Scientific Pharmaceuticals, Inc., Duarte, Calif.

Filed Feb. 4, 1980, Ser. No. 118,303

Int. Cl.³ A61K *7/043*

U.S. Cl. 424—61 **17 Claims**

1. A human nail coating composition comprising the following components:

(i) from about 21% to about 53% by weight of ethoxyethylmethacrylate;

(ii) from about 0.2% to about 11% by weight of a cross-linking agent having at least two methacrylate groups per molecule; and

(iii) from about 45% to about 71% by weight of a polymeric filler having at least 70% of ethylmethacrylate groups in a homopolymer or a copolymer with methyl methacrylate, whereby said components, when mixed, have a consistency sufficient to permit application to human nails, and whereby said composition is capable of curing within about 60 seconds to about 360 seconds upon application to human nails.

4,495,173

PRE-SHAMPOO TYPE HAIR TREATMENT COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,878

Claims priority, application Japan, Nov. 28, 1980, 55-167863

Int. Cl.³ A61K *7/06, 47/00*

U.S. Cl. 424—70 **5 Claims**

1. A pre-shampoo hair treatment composition which comprises

(A) 0.5–5% by weight of at least one decomposition derivative of keratin material selected from the group consisting of

(1) alkali salts of decomposition products obtained by oxidation of keratin material, and

(2) alkali salts of derivatives at the thiol group of decomposition products obtained by reduction of keratin material, alone or in combination with a keratin product having only been subjected to hydrolysis, and

(B) 0.1 to 5 wt% of at least one cationic polymer selected from the group consisting of diallyl quaternary ammonium salts, cationic celluloses, cationic starches and cationic vinyl polymers; in a polar solvent.

4,495,174

ANESTHETIC POLYORGANOPHOSPHAZENES

Harry R. Allcock; Paul E. Austin, and Thomas X. Neenan, all of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,345

Int. Cl.³ A61K *9/58*; C08G *79/02, 79/04*

U.S. Cl. 424—78 **20 Claims**

1. A long-acting, local anesthetic, comprising:

a polymeric phosphazene backbone, and

an organic radical having local anesthetic activity and an amino functional group on a phenyl ring through which said radical is covalently attached to said phosphazene backbone by a phosphorous-nitrogen single bond, and said organic radical being selected from the group consisting of radicals of benzocaine, butethamine, butyl ester of p-aminobenzoic acid, m-butethamine, procaine, chloroprocaine proparacaine, propoxycaine and tetracaine.

20. A long-acting local anesthetic medicament, comprising a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

4,495,175

PREPARATION OF HIGHLY PURIFIED HUMAN ANTIHEMOPHILIC FACTOR

Stephen I. Chavin, and Philip J. Fay, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,456

Int. Cl.³ A61K *35/16*; C07G *7/00*

U.S. Cl. 424—101 **10 Claims**

1. A method for preparing a highly purified, essentially homogeneous Antihemophilic Factor concentrate, comprising the steps of:

(a) obtaining an Antihemophilic Factor concentrate which is totally or partially free from prothrombin complex proteins, fibrinogen, and albumin,

(b) subjecting the Antihemophilic Factor concentrate to a separation on the basis of Stokes radius to separate Antihemophilic Factor of an apparently high Stokes radius value from other proteins,

(c) treating the Antihemophilic Factor concentrate to change the effective Stokes radius of the Antihemophilic Factor molecule to an apparently low value,

(d) subjecting the Antihemophilic Factor concentrate to a separation on the basis of Stokes radius to separate Antihemophilic Factor of apparently low Stokes radius value from other proteins,

(e) subjecting the Antihemophilic Factor concentrate to chromatography on an anion exchange medium to yield a highly purified, essentially homogeneous Factor VIII C characterized by a specific activity of at least 4000, being essentially free of fibrinogen and von Willebrand's protein, and single band electrophoretic mobility on SDS/PAGE at an apparent molecular weight around 100,000 daltons.

7. An essentially homogeneous, biologically active protein material characterized as follows:

(a) procoagulant activity of at least about 4,000 AHF units per mg of protein;

(b) essentially free of fibrinogen, fibronectin, von Willebrand's protein, and vitamin K-dependent coagulation factors; and

(c) single-band electrophoretic mobility wherein essentially all AHF activity is found in said single band indicative of a single protein having an apparent molecular weight on SDS PAGE of about 100,000.

4,495,176

PHOSPHOPEPTIDES FROM CASEIN-BASED MATERIAL

Gérard Brule; Loïc Roger, both of Rennes; Jacques Fauquant, Monfort, and Michel Piot, Rennes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Division of Ser. No. 229,062, Jan. 28, 1981, Pat. No. 4,358,465. This application Jun. 16, 1982, Ser. No. 388,931

Claims priority, application France, Feb. 1, 1980, 80 02281

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.³ A61K *33/42, 33/24;* **C07G** *7/00;* **C12P** *21/06*

U.S. Cl. 424—128 **16 Claims**

1. Products consisting of organophosphorated salts formed by phosphopeptides and linked bivalent cations produced by the process comprising subjecting a casein-based material containing phosphocaseinates of monovalent cations or paracasein derived therefrom to an enzymatic hydrolysis at a pH in the range of 7 to 9 and a temperature in the range of 37° to 45° C. by means of at least one proteolytic enzyme capable of substantially reproducing the proteic digestion which occurs in vivo in the human body, subjecting the resultant hydrolyzate to at least one ultrafiltration step on membranes which retain the enzyme but allow all the peptides of the hydrolyzate to pass in the permeate to obtain a permeate containing phosphopeptides and non-phosphorylated peptides, adding to the permeate at least one bivalent cation salt to form aggregates of the phosphopeptides to produce a solution containing essentially the aggregates of phosphopeptides and the non-phosphorylated peptides, subjecting the solution to at least one ultrafiltration step with membranes that retain the aggregates of phosphopeptides and allow the non-phosphorylated peptides to pass through, and recovering the retained aggregates of phosphopeptides.

4,495,177

GEL TABLETING AGENT

Corazon A. Taracatac, Hayward; Luis Flores, Castro Valley, and Viren Chaudhry, Fremont, all of Calif., assignors to Shaklee Corporation, San Francisco, Calif.

Filed Jan. 17, 1983, Ser. No. 458,627

Int. Cl.³ A61K *9/26, 33/26, 31/375*

U.S. Cl. 424—147 **8 Claims**

1. A composition for a direct compression tableting agent comprising:

a pharmacologically active mineral selected from the group consisting of iron, copper, aluminum, stannous, zinc and manganese;

a binder solution comprising at least one gum product selected from the group consisting of Agar-Agar, Locust Bean, Tagacanth, gelatin and gum ghatti; and

a substantially water insoluble compressible carrier comprising a mixture of about: 34% to 75% dicalcium phosphate anhydrous, 11% to 23% tricalcium phosphate, and 11% to 28% maltodextrin, said mineral and carrier being granulated together with said binder solution to form a mineral matrix granulation; and

ascorbic acid blended with said mineral matrix granulation provided in a pharmacologically beneficial amount;

whereby said mineral matrix granulation prevents substantial physical interaction between said mineral and said ascorbic acid such that reaction therebetween is minimized.

4,495,178

ENKEPHALIN ANALOGS

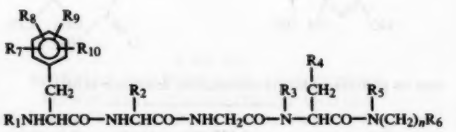
Donald W. Hansen, Jr., Chicago; David A. Jones, Jr., Evanston; Robert H. Mazur, Chicago, and James M. Schlatter, Glenview, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Oct. 6, 1983, Ser. No. 539,458

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—17 **50 Claims**

1. A Compound of the formula:



wherein R_1 is:

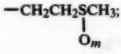
(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R_2 is:

(a) alkyl of 1 to 6 carbon atoms, inclusive; or

(b)



m being either zero, 1 or 2;

wherein R_3 is:

(a) hydrogen; or

(b) alkyl of 1 or 2 carbon atoms; inclusive;

wherein R_4 is:

(a) cyclohexyl, optionally substituted by alkyl of from 1 to 6 carbon atoms, inclusive;

wherein R_5 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R_6 is:

(a) carboxy;

(b) alkoxycarbonyl of 2 to 7 carbons atoms, inclusive;

(c) $CONH_2$;

(d) N,N-dialkylcarbamoyl of 3 to 7 carbon atoms, inclusive;
(e) hydroxy; or
(f) alkanoyloxy of 2 to 7 carbon atoms, inclusive; wherein R_7, R_8, and R_9 are H or alkyl or 1 to 6 carbon atoms, and may be the same or different;
wherein R_{10} is:
(a) hydrogen;
(b) hydroxy; or
(c) alkoxycarbonyloxy wherein the alkoxy portion is from 1 to 6 carbon atoms, inclusive;
wherein n is an integer of from 3 to 10 inclusive and the pharmacologically acceptable acid addition salts and suitable hydrated forms thereof.

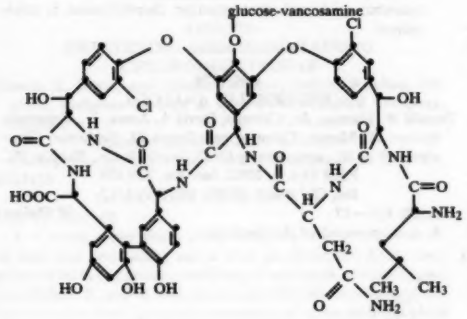
4,495,179

A51568 ANTIBIOTIC AND PROCESS FOR PRODUCING THEREOF

Marvin M. Hoehn, and Gary G. Marconi, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 450,880, Dec. 20, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,255
Int. Cl.³ A61K *37/00, 35/00;* **C07C** *103/52*
U.S. Cl. 514—9 **3 Claims**

1. Antibiotic A51568, which has the structure



and its pharmaceutically-acceptable, non-toxic salts.

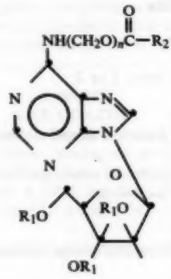
4,495,180

PRODRUGS OF ARA-A AN ANTIVIRAL AGENT

Jose Alexander, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1982, Ser. No. 390,444
Int. Cl.³ A61K *31/70;* **C07H** *19/06*
U.S. Cl. 514—46 **9 Claims**

1. A compound of the formula:

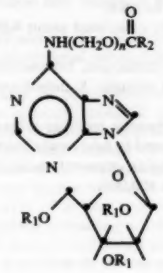


wherein
n is 1 or 2;
R_1 is independently H or lower alkanoyl having from 1 to 4 carbon atoms;
R_2 is selected from the group consisting of:
(a) straight or branched chain alkyl having from 1–20 carbon atoms;
(b) aryl having from 6–10 carbon atoms;
(c) cycloalkyl having from 3–8 carbon atoms;
(d) alkenyl having from 2–20 carbon atoms;
(e) cycloalkenyl having from 4–8 carbon atoms;
(f) alkynyl having from 2 to 20 carbon atoms;
(g) aralkyl having from 7–26 carbon atoms;
(h) aralkenyl having from 7–26 carbon atoms;
(i) lower acyloxy alkyl having from 2–20 carbon atoms;
(j) carboxyalkyl having from 2–20 carbon atoms.

4. 2',3',5'-triacetyl 6-(hydroxymethoxy)methylamino-purine-9-β-D arabinofuranoside.

8. An antimetabolite against herpes virus pharmaceutical composition for topical application comprising an anti-herpes virus effective amount of an active drug of the formula:

Formula I



wherein
n is 1 or 2;
R_1 is independently H or lower alkanoyl having from 1 to 4 carbon atoms;
R_2 is selected from the group consisting of:
(a) straight or branched chain alkyl having from 1–20 carbon atoms;
(b) aryl having from 6–10 carbon atoms;
(c) cycloalkyl having from 3–8 carbon atoms;
(d) alkenyl having from 2–20 carbon atoms;
(e) cycloalkenyl having from 4–8 carbon atoms;
(f) alkynyl having from 2 to 20 carbon atoms;
(g) aralkyl having from 7–26 carbon atoms;
(h) aralkenyl having from 7–26 carbon atoms;
(i) lower acyloxy alkyl having from 2–20 carbon atoms;
(j) carboxyalkyl having from 2–20 carbon atoms.

4,495,181

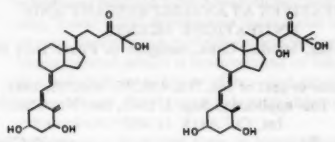
1,25-DIHYDROXY-24-OXO-VITAMIN D_3 AND 1,23,25-TRIHYDROXY-24-OXO-VITAMIN D_3

Anthony W. Norman, Riverside, Calif., and Eberhard Mayer, Ellwangen, Fed. Rep. of Germany, assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 3, 1983, Ser. No. 538,225
Int. Cl.³ A61K *31/59*
U.S. Cl. 514—167 **5 Claims**

4. The novel biologically active metabolite of vitamin D_3, 1,23,25-trihydroxy-24-oxo-vitamin D_3.

5. The method comprising the administration of an effective amount of 1,23,25-trihydroxy-24-oxo-vitamin D_3 to humans for



$1,25(OH)_2$-24-oxo-D_3 $1,23,25(OH)_3$-24-oxo-D_3

the treatment of disease states involving calcium homeostatis disorders.

4,495,182
CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

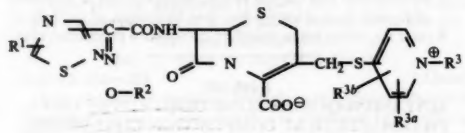
Filed May 27, 1982, Ser. No. 382,763

Claims priority, application United Kingdom, Jun. 22, 1981, 8119173; Sep. 29, 1981, 8129325; Apr. 26, 1982, 8212051

Int. Cl.³ C07D *501/36;* **A61K** *31/545*

U.S. Cl. 514—226 **31 Claims**

1. New cephem compounds of the formula:



wherein

R^1 is amino or a protected amino group;

R_2 is hydrogen, lower aliphatic hydrocarbon group selected from lower alkyl, alkenyl and alkynyl which may be substituted with carboxy, protected carboxy, lower alkylthio or phenyl, cyclo(lower)alkyl, or cyclo(lower)alkenyl;

R^3 is lower alkyl which may be substituted with carboxy, carbamoyl, hydroxy, amino or protected amino;

R^{3a} is hydrogen, lower alkyl or amino; and

R^{3b} is hydrogen or lower alkyl; and

pharmaceutically acceptable salts thereof.

4,495,183
ARYL SUBSTITUTED PYRIDO[1,4]BENZODIAZEPINES FOR TREATMENT OF DEPRESSION

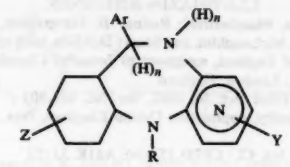
Chandler R. Taylor, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 395,218, Jul. 6, 1982, Pat. No. 4,447,361, and a continuation-in-part of Ser. No. 305,080, Sep. 24, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,638

Int. Cl.³ A61K *31/55*

U.S. Cl. 514—220 **60 Claims**

1. A method of treating depression which comprises administering an effective amount of a compound having the formula



wherein;

R is selected from the group consisting of hydrogen, loweralkyl or —alk¹—NR^1R^2,

R^1 and R^2 are selected from the group consisting of hydrogen, loweralkyl or R^1 and R^2 taken together with the adjacent nitrogen atom may form a heterocyclic residue selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl or 4-loweralkyl-1-piperazinyl,

Ar is selected from the group consisting of 2, 3 or 4-pyridinyl, 2 or 3-thienyl, phenyl or phenyl substituted by 1 to 3 radicals selected from halo, loweralkyl, loweralkoxy, trifluoromethyl or nitro and may be the same or different,

—alk¹ is a straight or branched hydrocarbon chain containing 1–8 carbon atoms,

Z is selected from the group consisting of hydrogen, halogen, loweralkyl, loweralkoxy, hydroxy or nitro,

Y is selected from the group consisting of hydrogen or 1–2 radicals selected from loweralkyl, loweralkoxy or hydroxy, and may be the same or different,

n is 0 or 1 and when n is zero the dotted line is a double bond, and the pharmaceutically acceptable acid addition salts thereof.

4,495,184
MORPHOLINO PROPANOL DERIVATIVES, FUNGICIDAL COMPOSITIONS AND USE

Hans-Joachim Knops; Wolfgang Krämer, both of Wuppertal, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

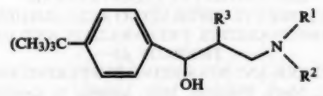
Filed May 23, 1983, Ser. No. 496,673

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019496

Int. Cl.³ A01N *43/84;* **C07D** *295/08*

U.S. Cl. 514—238 **6 Claims**

1. A 1-phenyl-3-amino-propane derivative of the formula



in which

R^1 R^2 together with the nitrogen atom to which they are bonded form a morpholino ring, optionally substituted by one or more methyl groups, and

R^3 is selected from the group consisting of a hydrogen atom and an alkyl radical,

or a physiologically acceptable acid addition salt thereof.

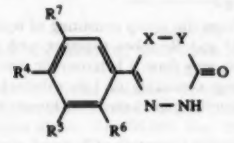
4. A fungicidal composition comprising a fungicidally effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,495,185
1,2,4-TRIAZIN-3(2H) ONES

David Brown, Macclesfield; Rodney B. Hargreaves, Poynton; Bernard J. McLoughlin, and Stuart D. Mills, both of Macclesfield, all of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Oct. 26, 1982, Ser. No. 436,801
Claims priority, application United Kingdom, Nov. 12, 1981, 8134175
Int. Cl.³ C07D *253/06*; A61K *31/53*
U.S. Cl. 514—242 7 Claims

1. A heterocyclic compound of the formula



wherein

X is —CR^1R^2 and Y is —NR^3—, wherein R^1, R^2 and R^3, which may be the same or different, each is hydrogen or alkyl or up to 4 carbon atoms;

wherein either R^4 is hydrogen, fluoro or chloro, or alkyl, alkenyl, halogenoalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atom, and R^5, R^6 and R^7, which may be the same or different, each is hydrogen, fluoro, chloro, bromo or iodo, or alkyl, alkenyl, halogenoalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atoms, provided that R^4, R^5, R^6 and R^7 are not all hydrogen;

or R^4 is bromo and R^5, R^6 and R^7 have the meanings stated above, provided that R^5, R^6 and R^7 are not all hydrogen;

or R^4 and R^5 together, or R^5 and R^6 together, or R^4 and R^7 together, form the —CH=CH—CH=CH— group and the other two of R^4, R^5, R^6 and R^7 have the meanings stated above.

7. A method for the treatment of acute or chronic heart failure in a warm-blooded animal in need of such treatment, which comprises administering to said animal an effective amount of a heterocyclic compound claimed in claim 1.

4,495,186
ORGANOMETAL COMPLEXES OF N-CYCLOHEXYL-PIPERAZINO ACETAMIDES OR PROPIONAMIDES, PREPARATION AND USE THEREOF AS ANTIULCER-ANTISECRETIVE-BUFFERING DRUGS

Camillo C. Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

Filed Jan. 31, 1983, Ser. No. 462,138
Claims priority, application Italy, Apr. 5, 1982, 20583 A/82
Int. Cl.³ A61K *31/495*; C07D *295/02*
U.S. Cl. 514—255 7 Claims

1. Salt of N-cyclohexyl-piperazino-acetamide or propionamide with dihydroxy aluminum-α-hydroxy-carboxylate.

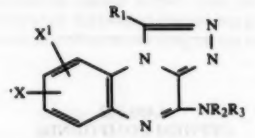
5. A pharmaceutical preparation with antiulcer, antisecretive and buffering action, which contains a salt according to claim 1, together with one or more vehicles and/or pharmacologically inert and non-toxic excipients

4,495,187
METHOD OF USING [1,2,4]TRIAZOLO[4,3-a]QUINOXALINE-4-AMINE DERIVATIVES AS ANTIDEPRESSANT AND ANTIFATIGUE AGENTS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 434,789, Oct. 18, 1982, abandoned. This application Sep. 2, 1983, Ser. No. 528,361
Int. Cl.³ A61K *31/495*
U.S. Cl. 514—250 19 Claims

1. A method for treating depression and fatigue in a mammal in need of such treatment, which comprises administering to said mammal an antidepressant/anti-fatigue effective amount of a compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

X and X^1 are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine and methoxy;

R_1 is selected from the group consisting of hydrogen, lower alkyl, lower perfluoroalkyl and phenyl; and

R_2 and R_3 are each selected from the group consisting of hydrogen, lower alkyl, phenylalkyl having up to three carbon atoms in the alkyl moiety and alkanoyl having from two to five carbon atoms, provided that at least one of R_2 and R_3 is always other than hydrogen or methyl; or

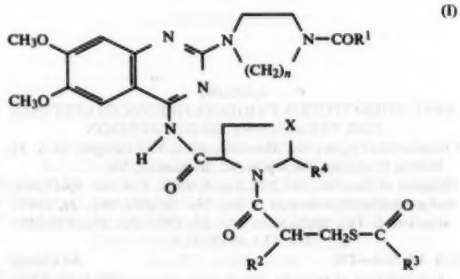
R_2 and R_3, when taken together, complete a piperazino ring.

4,495,188
ACYLAMINOQUINAZOLINE DERIVATIVES AND A PHARMACEUTICAL COMPOSITION CONTAINING THEM

Yasunobu Sato; Hiroshi Fukumi; Hiroyuki Koike, and Nobuaki Kitahara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,425
Claims priority, application Japan, Nov. 26, 1980, 55-166327
Int. Cl.³ A61K *31/505*; C07D *403/14, 417/14*
U.S. Cl. 514—260 20 Claims

12. A pharmaceutical composition for the treatment of hypertension, comprising an effective amount of an antihypertensive agent in admixture with a pharmaceutically acceptable carrier or diluent, wherein said antihypertensive agent is selected from compounds of formula (I):



(I)

in which:

R^1 represents lower alkoxy, lower alkyl, C_3–C_7 cycloalkyl,

lower alkenyl, vinyl having a phenyl or furyl substituent, said phenyl substituent being unsubstituted or having one substituent selected from lower alkoxy and methylenedioxy, lower alkyl having one substituent selected from phenyl, phenoxy and cycloalkylidene having 3 to 7 carbon atoms, phenyl which is unsubstituted or has 1–3 substituents selected from lower alkoxy and phenyl-substituted lower alkoxy, furyl, oxazolyl, methylthiooxadiazolyl or tetrahydrofuryl;

R^2 represents a hydrogen atom or lower alkyl;

R^3 represents lower alkyl or phenyl which is unsubstituted or has one substituent selected from lower alkyl, lower alkoxy and halogen atoms;

R^4 represents a hydrogen atom or C_2–C_4 alkylcarbonyloxy-substituted phenyl;

X represents methylene or sulphur; and

n is 2 or 3, and pharmaceutically acceptable acid addition salts thereof.

4,495,189

CONDENSED PYRIMIDINES

Zoltán Mészáros; József Knoll; Peter Szentmiklosi; Istvan Hermecz; Ágnes Horváth; Sándor Virág; Lelle Vasvári, and Ágoston Dávid, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Continuation-in-part of Ser. No. 14,689, Feb. 23, 1979, Pat. No. 4,472,398, which is a continuation-in-part of Ser. No. 742,464, Nov. 17, 1976, Pat. No. 4,460,771. This application Apr. 2, 1982, Ser. No. 364,753

Claims priority, application Hungary, Nov. 27, 1975, CI-1623

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.³ A61K *31/505;* **C07D** *471/04*

U.S. Cl. 514—258 **2 Claims**

2. A method of inhibiting thrombocyte aggregation which comprises the step of administering to a mammal susceptible to thrombocyte aggregation a pharmaceutically effective amount of the compound selected from the group consisting of:

1,6-dimethyl-3-carbamoyl-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2a)-pyrimidine;

1,6-dimethyl-3-(N-tertiary-butyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-(N-2-phenethyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-[N-(3,3-diphenyl-propyl)-carbamoyl]-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine;

1,6-dimethyl-3-(N-phenyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine; and

1,6-dimethyl-3-(N-methyl-carbamoyl)-4-oxo-1,6,7,8-tetrahydro-4H-pyrido(1,2-a)pyrimidine.

4,495,190

DERIVATIVES OF GUANINE FOR COMBATING HERPES VIRUS INFECTIONS

Curt-Erik Hagberg, Upplands Väsby; Karl N. Johansson, Enhörna; Zsuzsanna M. I. Kovacs, Järna, and Göran B. Stening, Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

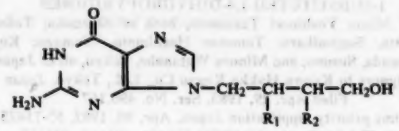
Continuation-in-part of Ser. No. 331,648, Dec. 17, 1981, abandoned. This application Oct. 25, 1982, Ser. No. 436,522

Claims priority, application Sweden, Dec. 22, 1980, 8009040

Int. Cl.³ A61K *31/52;* **C07D** *473/18*

U.S. Cl. 514—262 **32 Claims**

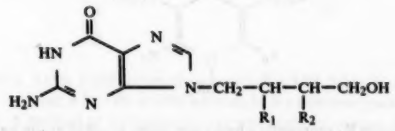
1. A compound of the formula



I

wherein each of R_1 and R_2, which are the same or different is hydrogen, hydroxy or fluoro; provided that R_1 or R_2 is hydrogen when R_1 and R_2 are different, and provided that R_1 and R_2 are hydroxy or fluoro when R_1 and R_2 are the same; or a physiologically acceptable salt or an optical isomer thereof.

13. A method for the treatment of herpes virus infections in an animal or human host in need of treatment, comprising administering a therapeutically effective amount of a compound of the formula



wherein each of R_1 and R_2, which are the same or different is hydrogen, hydroxy or fluoro; provided that R_1 or R_2 is hydrogen when R_1 and R_2 are different, and provided that R_1 and R_2 are hydroxy or fluoro when R_1 and R_2 are the same; or a physiologically acceptable salt or an optical isomer thereof.

4,495,191

FUNGICIDAL 3-1,2,4-TRIAZOL-1-YL-1,2-DIARYL-1-HALOGENO-PROP-1-ENE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE

Heinz Ehrhardt, Rehling; Hilmar Mildenberger, Kelkheim; Burkhard Sachse, Kelkheim, and Peter Hartz, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

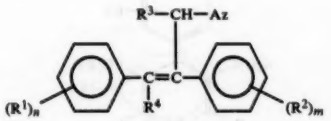
Filed Mar. 21, 1983, Ser. No. 477,080

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210570

Int. Cl.³ C07D *249/08;* **A01N** *9/22*

U.S. Cl. 514—383 **6 Claims**

1. A 3-azolyl-1,2-diaryl-1-halogenoprop-1-ene compound of the formula



or a salt, complex salt, or quaternization product thereof, wherein n and m are 1, 2, or 3,

all R^1 and R^2 are independently hydrogen, halogen, $-CF_3$, $-OCF_2CF_2H$, C_1–C_8-alkyl, C_5- or C_6-cycloalkyl, C_1–C_6-alkoxy, C_2–C_6-alkenoxy, phenoxy, phenyl or phenoxy or phenyl substituted by halogen.

R^3 is hydrogen or C_1–C_3-alkyl,

R^4 is chlorine or bromine, and

Az is 1,2,4-triazol-1-yl.

4,495,192
1-SUBSTITUTED 1,4-DIHYDROPYRIDINES

Kenji Muto; Yoshinori Takemoto, both of Shizuoka; Takao Hatta, Sagamihara; Tamotsu Hashimoto, Numazu; Koji Yamada, Susono, and Minoru Watanabe, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

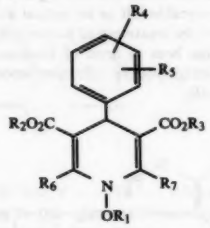
Filed Apr. 29, 1983, Ser. No. 490,167

Claims priority, application Japan, Apr. 30, 1982, 57-71425

Int. Cl.³ A61K *31/455;* **C07D** *211/94, 401/12, 405/12*

U.S. Cl. 514—318 **27 Claims**

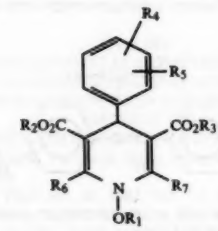
1. A 1,4-dihydropyridine compound having the general formula:



(I)

wherein R_1 represents a hydrogen atom, an alkyl group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a benzyl group, a phenethyl group, a diphenylmethyl group, a formyl group, an acetyl group, a pivaloyl group or a benzoyl group, R_2 and R_3 are the same or different groups and each represents a substituted or unsubstituted alkyl group having 1–5 carbon atoms wherein the substituents include a halogen atom and an alkoxy group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a disubstituted aminoalkyl group having 1–5 carbon atoms wherein substituents are the same or different groups and include alkyl groups having 1–5 carbon atoms, and a benzyl group or a substituted or unsubstituted heterocyclic group wherein the heterocyclic group includes a thienyl group, a furyl group, a piperidyl group, a pyranyl group, and a pyrrolidinyl group; and the substituent includes a hydrogen atom, an alkyl group having 1–5 carbon atoms, a benzyl group, a phenethyl group, a formyl group, an acetyl group and benzoyl group, R_4 and R_5 are the same or different groups and each represents a hydrogen atom, a halogen atom or a nitro group, and R_6 and R_7 are the same or different groups and each represents an alkyl group having 1–5 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

27. An anti-hypertensive or vasodilating composition comprising a pharmaceutical carrier and as active ingredient, an effective amount of a 1,4-dihydropyridine compound of the general formula:



(I)

wherein R_1 represents a hydrogen atom, an alkyl group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a benzyl group, a phenethyl group, a diphenylmethyl group, a formyl group, an acetyl group, a pivaloyl group or a benzoyl group, R_2 and R_3 are the same or different groups and each represents a substituted or unsubstituted alkyl group having 1–5 carbon atoms wherein the substituents include a halogen atom and an alkoxy group having 1–5 carbon atoms, an alkenyl group having 2–5 carbon atoms, a disubstituted aminoalkyl group having 1–5 carbon atoms wherein substituents are the same or different groups and include alkyl groups having 1–5 carbon atoms, and a benzyl group or a substituted or unsubstituted heterocyclic group wherein the heterocyclic group includes a thienyl group, a furyl group, a piperidyl group, a pyranyl group, and a pyrrolidinyl group; and the substituent includes a hydrogen atom, an alkyl group having 1–5 carbon atoms, a benzyl group, a phenethyl group, a formyl group, an acetyl group and benzoyl group, R_4 and R_5 are the same or different groups and each represents a hydrogen atom, a halogen atom or a nitro group, and R_6 and R_7 are the same or different groups and each represents an alkyl group having 1–5 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

4,495,193
IMIDAZOLE COMPOUNDS WHICH REDUCE GASTRIC ACID SECRETION

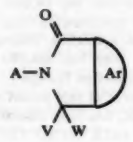
Sun H. Kim, Chestnut Hill, and Jacques-Pierre Moreau, Upton, both of Mass., assignors to Biomeasure, Inc., Hopkinton, Mass.

Filed Dec. 30, 1982, Ser. No. 454,733

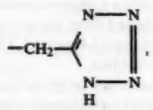
Int. Cl.³ A61K *31/415;* **C07D** *403/12*

U.S. Cl. 514—385 **7 Claims**

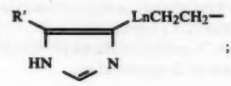
1. A compound having gastric acid secretion reducing activity and having the formula



wherein each V and W, independently, is H, —CH_2CN,



or —CH_2COOR^4 where R^4 is H or a lower alkyl; or V and W together represent =CHCOOR⁴ or =CHCN; A is



and Ar is benzene; or the pharmaceutically acceptable salt thereof.

7. A method of treating a mammal suffering from gastric hypersecretion comprising administering to said mammal a gastric secretion reducing amount of the compound of claim 1, 2, 3, or 4.

4,495,194
ANTIHYPERTENSIVE ISOINDOLE DERIVATIVES

Terence M. Dolak, and Tellis A. Martin, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

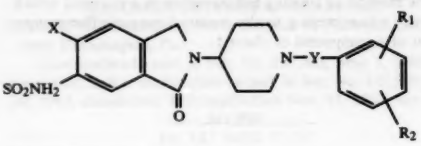
Filed Nov. 12, 1982, Ser. No. 441,204

Int. Cl.³ A61K *31/445;* **C07D** *401/04*

U.S. Cl. 514—323 **23 Claims**

1. A compound of Formula I

Formula I



wherein

X is halogen or trifluoromethyl;

R_1 and R_2 are independently hydrogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkylthio, trifluoromethyl, cyano, nitro;

Y represents a single bond or a divalent alkylene radical of 1 to 4 carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof.

18. The process for treating hypertension comprising systemically administering to a mammal in need of such treatment an antihypertensive effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

4,495,195

XANTHINE OXIDASE INHIBITING 3(5)-PHENYL-SUBSTITUTED-5(3)-PYRAZOLE-CARBOXYLIC ACID DERIVATIVES, COMPOSITIONS, AND METHODS OF USE

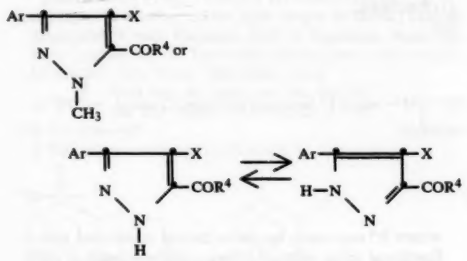
James R. Beck; Robert P. Gajewski, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 1, 1982, Ser. No. 437,994

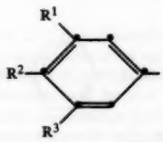
Int. Cl.[3] **A61J** *31/415;* **C07D** *231/20, 49/18*

U.S. Cl. 514—406 **45 Claims**

1. A method for lowering the blood urate (uric acid) level in mammals which comprises the parenteral administration to a mammal having an elevated blood urate level and in need of treatment a drug of the formula



wherein Ar is



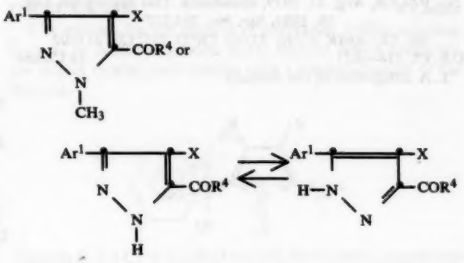
wherein

R^1, R^2 and R^3 are individually H, Cl, Br, F, I, C_{1-3} alkyloxy or C_{1-3} haloalkyl; provided that at least one of R^1, R^2 and R^3 is H and one is other than H, and only one is I;

X is NH_2, OH, H, F, Cl, Br, I or C_{1-3} alkyl;

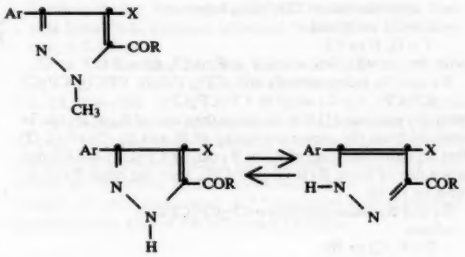
R^4 is OH or OM; wherein M is a non-toxic cation; in a quantity sufficient to lower said elevated blood urate level.

5. A compound of the formulas

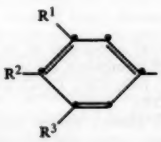


wherein Ar^1 is 3-trifluoromethylphenyl, X is OH, NH_2, H, Br, Cl, F or I and R^4 is OH or OM wherein M is a non-toxic cation.

42. A method of inhibiting the enzyme xanthine oxidase in a mammal which comprises administering to said mammal by the oral route a xanthine oxidase inhibiting dose of a drug of the formula



wherein Ar is



wherein

R^1, R^2 and R^3 are individually H, Cl, Br, F, I, C_{1-3} haloalkyl or C_{1-3} alkyloxy provided that one of R^1, R^2 and R^3 is H, one is other than H and not more than one is I;

X is NH_2, H, Cl, Br, F, I, OH or C_{1-3} alkyl;

R is OH, OM, O-alk, NH_2, NH-alk or N(alk)$_2$; wherein alk is C_{1-5} alkyl; and M is a non-toxic cation.

4,495,196

ANTIINFLAMMATORY 4,5-DIARYL-α-POLYFLUOROALKYL-1H-PYRROLE-2-METHANOLS AND METHOD FOR USE THEREOF

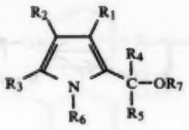
George A. Boswell, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 166,807, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 159,238, Jun. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 070,326, Aug. 27, 1979, abandoned. This application Aug. 19, 1981, Ser. No. 294,327

Int. Cl.³ A61K *31/40, 31/45;* **C07D** *207/323, 213/04*

U.S. Cl. 514—427 **33 Claims**

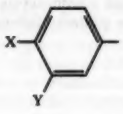
1. A compound of the formula



wherein

R_1 = H or C_1–C_2 alkyl;

R_2 and R_3 independently = 3-pyridyl or



where

X = H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2 alkyl)amino or $CH_3S(O)_n$ where n = 0, 1 or 2; and

Y = H, F or Cl;

with the proviso that when Y is F or Cl, then X is F or Cl;

R_4 and R_5 independently = H, CF_3, CF_2H, $CFCl_2$, CF_2Cl, CF_2CF_3, C_1–C_3 alkyl or $CF_2CF_2CF_3$;

with the provisos (1) that no more than one of R_4 or R_5 can be selected from the group consisting of H and C_1–C_3 alkyl, (2) that no more than one of R_4 or R_5 can be CF_2CF_3 and (3) that when one of R_4 or R_5 is $CF_2CF_2CF_3$, then the other R_4 or R_5 must be H; or

R_4 and R_5 taken together = CF_2CF_2CFZ—,

where

Z = F, Cl or Br;

R_6 = H; C_1–C_6 alkyl;

R_7 = H, C_1–C_6 alkyl; benzyl; benzyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3 C_1–C_2 alkyl, or C_1–C_2 alkoxy;

benzoyl; or benzoyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy; or —$COOR_8$;

R_8 = C_1–C_4 alkyl; phenyl; phenyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy; benzyl or benzyl substituted by up to three substituents, where said substituents are independently selected from F, Cl, Br, NO_2, CF_3, C_1–C_2 alkyl, or C_1–C_2 alkoxy;

with the proviso that R_6 cannot be H when R_7 is alkanoyl, benzoyl or substituted benzoyl, or $COOR_8$; or a pharmaceutically suitable acid addition salt where R_2 or R_3 is 3-pyridyl or X is dialkylamino; or a pharmaceutically suitable metal salt when R_7 is H.

23. A method of treating inflammation in a mammal which comprises administering to the mammal an antiinflammatory amount of a compound of claim 1.

4,495,197

N-CARBOXYL-THIENAMYCIN ESTERS AND ANALOGS THEREOF AS ANTI-INFLAMMATORY AGENTS

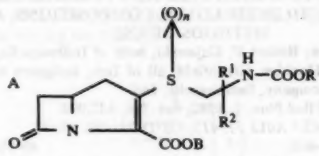
James B. Doherty, New Milford; Morris Zimmerman, Watchung, and Bonnie M. Ashe, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 24, 1982, Ser. No. 380,984

Int. Cl.³ C07D *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **7 Claims**

1. A method of treating anti-inflammatory conditions comprising the administration to mammalian species in need of such treatment a therapeutically effective amount of the composition containing a compound of formula:



(I)

or a pharmaceutically acceptable salt thereof wherein:

R^1 *and* R^2 independently are

(1) hydrogen; or

(2) C_{1-6}alkyl;

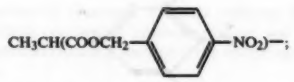
(1) hydrogen;

(2)

where R^3 represents hydrogen, C_{1-6}alkyl, —COR^4 or

where R^4 represents benzyl or benzyl substituted with a functional group selected from a group consisting of nitro, CH_3SO_2, aminosulfonyl, fluoro, chloro, methyl, methoxy, and methylthio or methyl; or

(3)



R and B independently are

(1) C_{1-6}alkyl;

(2) phenyl;

(3) benzyl or benzyl substituted with a functional group as previously defined;

(4) benzhydryl;

(5) triphenylmethyl;

n is 0, 1 or 2.

4,495,198
ANTIHYPERTENSIVE CHROMONOXYPROPANOLAMINES

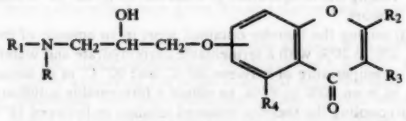
Edwin S. Wu, Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,403, May 1, 1981, abandoned, and a continuation-in-part of Ser. No. 422,929, Sep. 24, 1982, abandoned. This application Nov. 15, 1982, Ser. No. 441,890

Int. Cl.³ A61K *31/35*

U.S. Cl. 514—456 10 Claims

1. A method of reducing hypertension in an animal which comprises administering to the animal an amount effective to reduce hypertension of a chromone having the formula:



or a pharmaceutically acceptable or quaternary ammonium salt thereof wherein the side chain is in the 6 or 7 position of the chromone nucleus; R is H or methyl, R_1 is H, primary or secondary alkyl of 1 to 4 carbons; lower alkenyl or cycloalkyl of 3 to 6 carbons; R_2 is hydrogen, lower alkyl, CF_3, phenyl, o-halophenyl or p-halophenyl, R_3 is hydrogen or phenyl or benzyl and R_4 is hydrogen or hydroxyl; provided, however, that at least one of R_2 or R_3 is phenyl or substituted phenyl.

4,495,199
DIOXOLANIC AMINE WITH PHARMACOLOGICAL ACTIVITY, ITS METHOD OF PREPARATION, THE PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND THEIR USE IN HUMAN MEDICINE

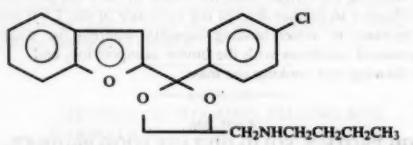
José Miguel B. Ribalta, 125 bis, calle Mayor de Sarriá ; Leonida Bruseghini, 5, calle Caponata, both of Barcelona, Spain; Silvano Casadio, 11, via Tantardini, Milan, Italy, and Jorge P. Iniesta, 39, calle Leyva, Barcelona, Spain

Filed Sep. 30, 1982, Ser. No. 432,397

Int. Cl.³ A61K *31/34*; C07D *317/00*

U.S. Cl. 514—467 5 Claims

1. Dioxolanic amine of the formula I



corresponding to the 2-(2'-benzofuranil)-4-n-butylaminomethyl-2-p-chlorophenyl-1,3-dioxolane, as well as its pharmaceutically acceptable salts such as maleate, citrate, orotate, oxolate, malonate, p-toluensulphate and the like.

2. A pharmaceutical composition useful in effecting intense vasodilatory, anti-angina and anti-arrhythmic activity, containing as active ingredient a vasodilating, anti-angina and anti-arrhythmic effective amount of the dioxolanic amine of its salt according to claim 1, in an acceptable pharmaceutical carrier.

5. A pharmaceutical composition useful for alleviation of symptoms associated with fibrillation and vasopression, containing as active ingredient a therapeutic effective amount of the dioxolanic amine or its salt according to claim 1, in an acceptable pharmaceutical carrier.

4,495,200
PROCESS FOR THE CONTROL OF SULFATE-REDUCING BACTERIA

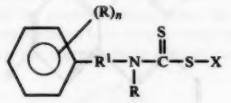
Merlin R. Lindstrom, Bartlesville; Leslie J. Henshaw, Stillwater; Harold W. Mark, and James B. Clark, both of Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1983, Ser. No. 539,441

Int. Cl.³ A01N *47/10*

U.S. Cl. 424—286 4 Claims

1. A process for the control of planktonic sulfate-reducing bacteria in industrial process water systems which comprises the step of treating said systems with a dithiocarbamate of the formula:



wherein R is a C_1 to C_4 alkyl radical, R^1 is either a methylene or ethylene radical, n is 0, 1, 2, or 3 and X is a Group IA alkali metal and wherein said dithiocarbamate is incorporated into the said water systems in a concentration between about 1 ppm and 10,000 ppm.

4,495,201
PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATING HEART DISEASES THEREWITH

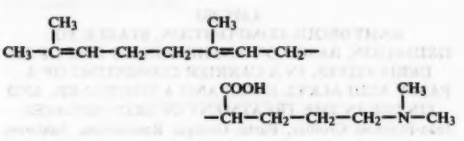
Ljudmila S. Bondar; Rostan A. Okunev; Lev V. Polezhaev; Sergei P. Kolchin; Ljudmila V. Cherkasova, and Lilia F. Nikolaeva, all of Moscow, U.S.S.R., assignors to Institut Organicheskoi Khimii Imeni N.D. Zelinskogo; Vsesojuzny Kardiolgichesky Anuchny Tsentr and Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR, all of Moscow, U.S.S.R.

Filed May 26, 1982, Ser. No. 382,194

Int. Cl.³ A61K *31/195*

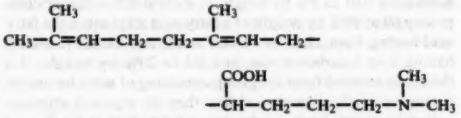
U.S. Cl. 514—560 6 Claims

1. A pharmaceutical composition for treating heart diseases selected from the group consisting of myocardial infarction, myocarditis, myocardiopathy, and myocardial dystrophy comprising an injectable solution containing from 1.5 to 5% by weight of the compound 4',5,9-trimethyl-2-(4'-azapentyl)-decadi-4,8-ene acid of the following formula:



in combination with a pharmaceutically acceptable carrier.

4. A method of treating heart diseases selected from the group consisting of myocardial infarction, myocarditis, myocardiopathy, and myocardial dystrophy in a warm-blooded animal comprising administering to said warm-blooded animal an injectable solution containing from 1.5 to 5% by weight of the compound 4',5,9-trimethyl-2-(4'-azapentyl)-decadi-4,8-ene acid of the following formula:



in combination with a pharmaceutically acceptable carrier.

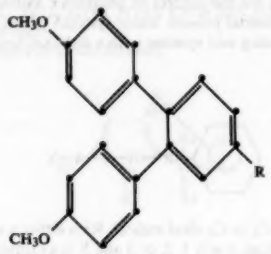
4,495,202

TERPHENYL DERIVATIVES AND PHARMACEUTICAL USES THEREOF

Ken Matsumoto, and John S. Ward, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1983, Ser. No. 506,931
Int. Cl.³ A61K *31/09*; C07C *43/205, 43/225*
U.S. Cl. 514—721 20 Claims

1. A compound of the formula I



I

wherein R is trifluoromethyl, phenyl, or phenyl substituted with iodo, bromo, chloro, fluoro, or trifluoromethyl.

8. A method of treating pain, fever, thrombosis, inflammation, or arthritis which comprises administering to a mammal in need of such treatment an effective amount of a compound of claim 1.

12. A pharmaceutical formulation useful in the treatment of pain, fever, thrombosis, inflammation, or arthritis comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable carrier.

4,495,203

ANHYDROUS COMPOSITION, STABLE TO OXIDATION, BASED ON ANTHRALIN OR ONE OF ITS DERIVATIVES, IN A CARRIER CONSISTING OF A FATTY ACID ALKYL ESTER AND A THICKENER, AND ITS USE IN THE TREATMENT OF SKIN DISEASES

Jean-Francois Grollier, Paris; Georges Rosenbaum, Asnieres; Josiane Allec, Pierrefitte, and Braham Shroot, Antibès, all of France, assignors to Societe Anonyme dite: L'OREAL, Paris, France

Filed Oct. 22, 1982, Ser. No. 435,983
Claims priority, application France, Oct. 23, 1981, 81 19952; Apr. 5, 1982, 82 05864
Int. Cl.³ A61K *31/05*
U.S. Cl. 514—732 6 Claims

1. A stable to oxidation, anhydrous composition for treatment of diseases of the skin and particularly for psoriasis, containing 0.01 to 5% by weight of anthralin in a carrier comprising 60 to 99% by weight of a fatty acid alkyl ester, the fatty acid having from 12 to 18 carbon atoms and the alkyl radical having 2 to 3 carbon atoms, and 0.1 to 20% by weight of a thickener selected from the group consisting of silica having an average particle diameter of less than 30 mμ and ethylene polymer powder having a density of 0.9 to 0.96 (g/cm^3).

4,495,204

NEUTRAL TASTING ALCOHOLIC BEVERAGE

Robert L. Weaver, Montreal West; Joris E. A. Van Gheluwe, Longueuil, and John A. McKee, Greenfield Park, all of Canada, assignors to The Molson Companies Limited, Ontarion, Canada

Filed Jul. 27, 1983, Ser. No. 517,800
Claims priority, application Canada, Aug. 9, 1982, 409030
Int. Cl.³ C12C *11/04*; C12G *3/00*
U.S. Cl. 426—16 16 Claims

1. A method of producing a neutral tasting alcoholic beverage comprising the steps of:

(i) mashing a well modified standard brewers malt, with hops and water at a temperature of 40° C. to 45° C. for a period of time of between 10 to 30 minutes, and thereafter raising the temperature to from 60° C. to 62° C. to obtain a wort;

(ii) mixing the thereby obtained wort in an amount of from 2% to 20% with a fermentable carbohydrate and water at a temperature of between 80° C. and 90° C. in an amount of from 80% to 98%, to obtain a fermentable solution;

(iii) cooling the thereby obtained solution to between 14° C. to 20° C., pitching the cooled solution with brewers yeast and fermenting the solution for from 4 to 8 days at from 14° C. to 20° C., and

(iv) thereafter cooling the fermented solution to 0° C. for from 4 to 7 days, and filtering the solution to obtain a neutral tasting alcoholic beverage.

4,495,205

MEAT ANALOG PRODUCT

Rita W. Brander, New Rochelle, N.Y., and Teresa A. Raap, Ridgefield, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,591
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 27 Claims

1. A process for preparing a meat analog product from texturized vegetable protein (TVP), comprising;

(a) heating a TVP containing entrapped volatiles in an aqueous medium to remove said volatiles therefrom;

(b) freezing the heated TVP with removed volatiles for a time and at a temperature effective to disrupt the fiber structure of the TVP and decrease its water binding capacity;

(c) thawing and combining the thawed TVP with a binder composition;

(d) forming a mass wherein the combined TVP and binder composition are in intimate admixture;

(e) freezing the formed mass for a time and at a temperature effective to further disrupt the structure of the TVP and decrease its water binding capacity wherein the water released combines with the binder composition; and

(f) thawing and cooking the mass.

4,495,206

HIGH PROTEIN, SOLID DIETARY FOOD PRODUCT

Edward Wein, Willowdale, Canada, assignor to Canada Packers, Inc., Canada

Continuation-in-part of Ser. No. 898,994, Apr. 21, 1978, abandoned. This application Apr. 1, 1980, Ser. No. 136,408
Int. Cl.³ A23L *1/04*; A23J *3/00*
U.S. Cl. 426—250 6 Claims

1. A solid, high protein dietary food product consisting essentially of a gelatin hydrolysate, and one or more members selected from the group consisting of essential amino acids, preservatives, flavoring agents, coloring agents, texturizers and sweetners, wherein said gelatin hydrolysate is composed predominantly of high molecular weight polypeptides such that it is solid at room temperature over the range of concentrations of protein solids in aqueous solution from 50 to 100%, by weight, and such that the viscosity of a 10% solids (w/w)

aqueous solution at 140° F. is between about 13–25 millipoises and wherein said gelatin hydrolysate is present in quantities equal to or greater than 50% by weight of the product.

4,495,207

PRODUCTION OF FOOD-GRADE CORN GERM PRODUCT BY SUPERCRITICAL FLUID EXTRACTION

Donald D. Christianson, Peoria, and John P. Friedrich, Green Valley, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,541
Int. Cl.³ A23L 1/172
U.S. Cl. 426—312 **16 Claims**

1. A method for preparing a high-protein, food-grade product from a dry-milled corn germ fraction comprising the steps of:

a. contacting said dry-milled corn germ fraction with carbon dioxide, under supercritical conditions, as a solvent and thereby extracting the lipids from said germ fraction;

b. separating the lipid-containing carbon dioxide solvent from the substantially lipid-free germ fraction residue; and

c. recovering said residue as a high-protein, food-grade product.

4,495,208

SHELF-STABLE HIGH MOISTURE PET FOOD

Herman H. Friedman, Forest Hills, and Walter R. Popp, Valley Cottage, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 353,291, Mar. 1, 1982, abandoned, which is a continuation of Ser. No. 158,014, Jun. 7, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,901
Int. Cl.³ A23K 1/00
U.S. Cl. 426—335 **8 Claims**

1. A moist, microbiologically-stable, nutritionally-balanced pet food comprising water, protein, fat, carbohydrates, vitamins and minerals and a bactericidal preservation system wherein the pet food has a moisture content of from 50% to 80% by weight and a water activity of from 0.92 to 0.98 and reamins stable, without pasteurization, against the growth of bacteria and mold, and further comprising a preservation system consisiting of, on a total weight basis, from 4 to 15% sugars selected from the group consisting of fructose and high fructose corn syrup solids, from 0.3 to 3% of an edible organic acid selected from the group consisting of heptanoic, octanoic and nonanoic acid and combinations thereof, sufficient inorganic acid to maintain the pH of the pet food within the range of from 3.5 to 5.8, from 1.5 to 3% of a high molecular weight ionic polysaccharide selected from the group consisting of carageenans, pectins and alginates and from 0.1 to 0.5% of an antimycotic seleted from the group consisting of sorbic acid and the edible salts thereof.

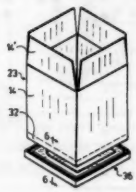
4,495,209

METHOD OF FORMING, FILLING AND HERMETICALLY SEALING CONTAINERS

Michael G. Whiteside, 10 Relmar Rd., Apt. 1, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 385,430, Jun. 7, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 562,542
Int. Cl.³ B65B 7/20, 7/28
U.S. Cl. 426—392 **2 Claims**

1. A method of forming, filling and hermetically sealing a container, comprising providing a container body of paperboard material with opposed ends, said container body being of rectangular section with a front panel, a rear panel and two side panels, said panels having level edges at one end with a strip of thermoplastic material extending around surfaces of the panels adjacent the edges, each panel having a closure flap at its opposite end, a dab of thermoplastic material being provided at said opposite end of the junction of each pair of adjacent panels, providing a rectangular closure member of thermoplastic material with a reversely bent peripheral wall providing a groove, said closure member also having an opening and removable closing means closing said opening, the method further comprising supplying the container body in a flattened form to a forming station with said opposite end uppermost and said one end lowermost, opening the flattened container body to a box form, heat softening the thermoplastic strip adjacent the edges of the panels at said one end, moving the container body with said one end lowermost to a closure-receiving station, fitting the closure member onto the container body by inverting the closure member and causing portions of the panels at said one lowermost, end to enter into the peripheral groove of the inverted closure member with the softened thermoplastic strip engaging the peripheral wall of the closure member, thus enchancing the hermetic seal between the closure member and the container body since the heat softened thermoplastic strip tends to flow downwardly into the closure member allowing the thermoplastic strip to cool and permanently secure the closure member to the container body, thereby forming a container, moving the container to a filling station, filling the container with product while the container is still in the orientation with said opposite end uppermost, moving the filled container to a closing station, closing the container while in said orientation by folding two opposed panels downwardly to a closed position, providing heat softened thermoplastic on the uppermost faces of the closed flaps, folding the other two opposed flaps downwardly to a closed position in engagement with the thermoplastic material on the flaps and allowing the thermoplastic material to cool and thereby seal said opposite end of the container, and then heat softening the dabs of thermoplastic material at said junctions of the panels and inverting the container to position said opposite end lowermost to cause said dabs to flow into and seal the corners of the container at said opposite end to more thoroughly seal the container and prevent possible leakage of the product from the corners of the corner.



4,495,210

CAFFEINE ADSORPTION

David Green, Chavornay, and Maurice Blanc, Morges, both of Switzerland, assignors to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 28, 1980, Ser. No. 153,904
Int. Cl.³ A23F 5/22
U.S. Cl. 426—422 **5 Claims**

1. A process for the recovery of caffeine from an aqueous solution containing caffeine extracted from green coffee beans and non-caffeine green coffee solids which comprises contacting the solution with substantially neutral activated carbon and separating the activated carbon, with caffeine adsorbed thereon, from aqueous solution of reduced caffeine content.

4,495,211

PROCESS FOR THE DECAFFEINATION OF GREEN COFFEE BEANS

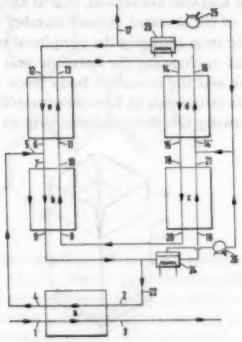
Gerben D. Mooiweer, Nieuwegein, Netherlands, assignor to Douwe Egberts Koninklijke Tabaksfabriek Koffiebranderijen Theehandel N.V., Utrecht-th, Netherlands

Filed Oct. 14, 1982, Ser. No. 434,185

Claims priority, application Netherlands, Oct. 27, 1981, 8104854

Int. Cl.³ A23F *5/20*

U.S. Cl. 426—422 5 Claims



1. A continuous process for the decaffeination of green coffee beans, comprising the following integrated process stages:

(a) contacting the green coffee beans after soaking in water with a caffeine-deficient aqueous solution from stage (b), being an equilibrium extract of these beans from which caffeine has been withdrawn, resulting in caffeine-deficient beans on the one hand and an equilibrium extract of the beans on the other;

(b) contacting the equilibrium extract of the green coffee beans, produced in stage (a) together with the solution of coffee bean components, produced in stage (e), with a caffeine-deficient adsorbent loaded with non-caffeine coffee bean components, and loaded adsorbent being produced in stage (c) and having a preferential adsorption capacity for caffeine, resulting, on the one hand, in a caffeine-deficient solution of coffee bean components, which solution is concentrated by evaporation, the distillate being condensed and returned to stage (d) while the concentrate is partially passed to stage (c) and partially recycled to stage (a), and, on the other hand, an adsorbent loaded with coffee bean components, which loaded adsorbent is supplied to stage (e);

(c) contacting the caffeine-deficient solution of coffee bean components, produced in stage (b), with clean adsorbent, resulting, on the one hand, in a clean aqueous solution and, on the other, in an adsorbent loaded with soluble coffee bean components, but deficient in caffeine, which loaded adsorbent is supplied to stage (b);

(d) contacting the clean aqueous solution produced in stage (c) with the adsorbent loaded with coffee bean components rich in caffeine, which solution is concentrated by evaporation, the distillate being condensed and returned to stage (d) while the concentrate is partially discharged and partially supplied to stage (e);

(e) contacting the caffeine-rich solution of coffee bean components from stage (d) with the adsorbent loaded with soluble coffee bean components from stage (b), resulting, on the one hand, in a solution of coffee bean components, which is supplied to stage (b), and on the other hand, in an adsorbent loaded with soluble coffee bean components rich in caffeine, which is supplied to stage (d).

4,495,212

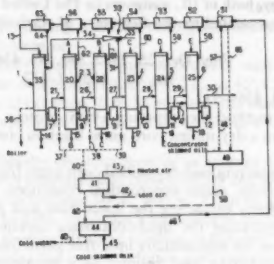
PROCESS FOR CONCENTRATING A COLD PRODUCT AND FOR PREHEATING A CIRCULATING FLUID

Jacques J. Ciboit, Paris, France, assignor to Laguilharre S.A., Rueil Malmaison, France

Filed May 28, 1981, Ser. No. 267,893

Int. Cl.³ A23C *1/00*; B01D *1/18*

U.S. Cl. 426—492 4 Claims



1. A process for concentrating a cold liquid dairy product and for preheating a circulating fluid, which comprises the steps of:

(a) submitting said liquid dairy product to a multi-stage evaporation by supplying a first evaporation stage with heating vapor as a source of heat for evaporation of the liquid dairy product in said first evaporation stage to convert said heating vapor to condensate and produce evaporation vapor from the liquid dairy product, supplying the second evaporation stage with evaporation vapor produced in the first evaporation stage, so that the first evaporation stage supplies a source of heat for evaporation of the liquid dairy product in said second evaporation stage to convert the evaporation vapor supply in said second evaporation stage to condensate and produce evaporation vapor from the liquid dairy product, and repeating the above steps of submitting and supplying up to and including the last evaporation stage,

(b) withdrawing evaporation vapor, condensates or a mixture thereof, from at least one evaporation stage,

(c) preheating said circulating fluid by a one-step heat exchange with the evaporation vapor, the condensates or the mixture thereof, withdrawn from said at least one evaporation stage, and,

(d) preheating the cold liquid dairy product to be concentrated, by heat exchange with at least a portion of the condensates resulting from the vapor, the condensates or the mixture thereof after their heat exchange with the circulating fluid.

4,495,213

WATER-SOLUBLE SWEETENING TABLET

Erich Wolf, Overath, and Rolf Deininger, Cologne, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Wiesentalstr., Switzerland

Filed Sep. 30, 1982, Ser. No. 431,072

Claims priority, application European Pat. Off., Aug. 31, 1982, 82108002.5

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 5 Claims

1. A compressed water-soluble sweetening tablet containing, on a dry weight basis:

70 to 95% of L-aspartyl-L-phenylalanine methylester as a sweetening agent, having a granular size of 0.01 to 0.4 mm,

0 to 1% of an auxiliary tabletting agent, and

the rest comprising a water-swellable jellifier as a solubility accelerator, selected from the group consisting of cross-

linked sodium carboxymethylcellulose and cross-linked polyvinyl pyrrolidone,

wherein the granules of said sweetening agent are coated with a dried layer of said solubility accelerator.

4,495,214

PROCESS FOR PRODUCING QUICK-COOKING PRODUCTS

Edward Seltzer, Teaneck, N.J., and William A. Hamilton, San Jose, Costa Rica, assignors to Rutgers Research & Educational Foundation, New Brunswick, N.J.

Continuation-in-part of Ser. No. 307,614, Oct. 1, 1981,. This application Dec. 28, 1983, Ser. No. 566,181

Int. Cl.³ A23L *1/16*

U.S. Cl. 426—557 **23 Claims**

1. A process for making quick-cooking pasta comprising the steps of:

(a) combining flour, water, a carbonate selected from the group consisting of edible ammonium carbonate and edible encapsulated alkali metals, an acidic leavening salt, and an interrupter to form a dough, said interrupter being present in an amount sufficient to improve the consistency of the final product,

(b) extruding the dough through an extrusion cooker under conditions of pressure and temperature sufficient to permit the carbonate to react with the acidic leavening salt and to at least partially gelatinize the starch in the flour while forming the dough, and

(c) drying the extruded formed pasta.

4,495,215

FLUIDIZED BED FURNACE AND METHOD OF EMPTYING THE SAME

Eike Barnert, Jülich, and Heinz Schmitz, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 269,651, Jun. 2, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 457,054

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3021037

Int. Cl.³ B05B *1/34;* **C23C** *11/00*

U.S. Cl. 427—6 **10 Claims**

1. Fluidized bed furnace for the coating of nuclear reactor fuel particles comprising

a reaction tube for containing said particles in a fluidized bed therein, having at least one orifice at its bottom end;

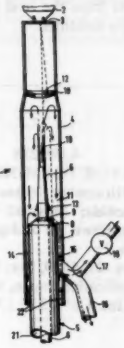
duct means below said bottom end of said reaction tube including an outer tube for supply of a carrier gas to said reaction tube, having an inlet and being connected for outlet purposes to said reaction tube, and at least one inner tube for supply of a coating gas disposed inside said outer tube below said at least one orifice;

a porous plate (10) extending across the interspace between outer and inner tubes, said inlet of said outer tube being located below said porous plate and connecting with said interspace, and

overflow duct means (17, 18) for venting said outer tube,

said at least one inner tube being axially movable to an extent sufficient to lower it, from its normal position during operation of the furnace, to a position to which a passage for downwardly falling fuel particles is produced,

a collecting device being located in said interspace below said outer tube inlet for catching particles that have fallen through said passage, and



a coating gas supply, an inert gas supply, and means for replacing the coating gas in said at least one inner tube with the inert gas and vice versa.

4,495,216

POWDER FOR USE IN DRY SENSITIZATION FOR ELECTROLESS PLATING

Gunnar Soerensen, Risskov, and Leo G. Svendsen, Åarhus C, both of Denmark, assignors to A/S Neselco, Copenhagen, Denmark

Filed Jul. 22, 1982, Ser. No. 400,884

Claims priority, application Denmark, Jul. 24, 1981, 3300/81

Int. Cl.³ B05D *3/00;* **C08K** *3/10;* **C23C** *3/02*

U.S. Cl. 427—25 **10 Claims**

1. A finely powdered, hydrophobic, thermoplastic material which is useful in the sensitizing of the surface of a substrate on which metal is to be electrolessly deposited, prepared by depositing from 0.1 to 10% by weight of a surfactant and from 0.1 to 10% by weight of a sensitizing tin compound on a thermoplastic powder, said percentages being based the weight of said thermoplastic powder, the powdered material obtained by said process upon melting down on a substrate resulting in a well defined metallization edge subsequent to electroless metallization.

4,495,217

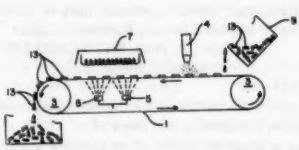
METHOD FOR APPLYING POWDERED COATINGS

Timothy J. Schrum, 125 N. Church St., Mohnton, Pa. 19540

Filed Apr. 19, 1982, Ser. No. 369,594

Int. Cl.³ B05D *1/04, 3/02*

U.S. Cl. 427—27 **9 Claims**



1. A method for applying powdered coatings to relatively small parts without fixturing, comprising the steps of:

placing the parts on a heat conductive surface;

distributing the fusible coating powders over the exposed surfaces of the part;

heating the powders distributed on the parts to above their melting point while maintaining te heat conductive surface at a temperature below which any overspray coating powders on the conductive surface become tacky.

discontinuing the heating; cooling the powders below their melting point; and

removing the parts from the heat conductive surface after the coatings have solidified.

4,495,218

PROCESS FOR FORMING THIN FILM

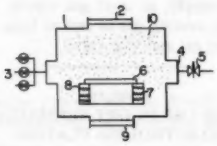
Kazufumi Azuma, Hiratsuka; Mitsuo Nakatani, Yokohama; Kazuo Nate, Machida; Masaaki Okunaka, and Hitoshi Yokono, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,686

Claims priority, application Japan, Sep. 29, 1982, 57-168463

Int. Cl.³ C23C 17/00

U.S. Cl. 427—53.1 **8 Claims**



1. A process for forming a thin film by a chemical vapor deposition method, which comprises:

supplying a starting material gas containing at least one polysilane of the formula:

$$Si_nH_{2n+2}$$

wherein n is an integer of 2, 3 or 4, into a reaction vessel of a chemical vapor deposition apparatus containing a substrate heated to a temperature of from 20° C. to 300° C.; the pressure in said reaction vessel being from 0.1 to 100 torr,

irradiating the starting material gas with ultraviolet light, and

forming a thin film of silicon on the substrate.

4,495,219

PROCESS FOR PRODUCING DIELECTRIC LAYERS FOR SEMICONDUCTOR DEVICES

Takashi Kato, and Nobuo Toyokura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 8, 1982, Ser. No. 433,520

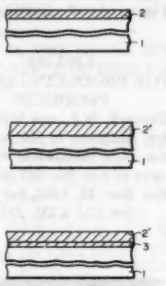
Int. Cl.³ B05D 5/12

U.S. Cl. 427—82 **11 Claims**

1. A process for producing a dielectric layer on a semiconductor layer, comprising the steps of:

forming a layer of oxide of an element selected from the group consisting of tantalum, titanium, niobium, hafnium, yttrium, zirconium, and vanadium on the surface of the semiconductor layer; and

heating the semiconductor layer, having the oxide layer thereon, in a wet oxidizing atmosphere at a temperature in the range of 700° C. to 1200° C., to thermally oxidize the semiconductor layer so as to form an insulating layer, which comprises the oxide of the semiconductor layer, at



the interface between the semiconductor layer and the oxide layer.

4,495,220

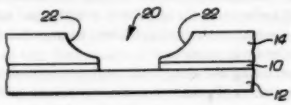
POLYIMIDE INTER-METAL DIELECTRIC PROCESS

Stanley Wolf, Sunset Beach, and Warren C. Atwood, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 7, 1983, Ser. No. 540,064

Int. Cl.³ H01L 21/312

U.S. Cl. 427—82 **11 Claims**



1. A method for forming via holes in a polyimide dielectric film, said method comprising the steps of:

forming a polyimide layer over a lower metal layer in a semiconductor circuit;

forming an upper layer of silicon dioxide highly doped with phosphorous, over the polyimide layer;

etching a via hole pattern in the silicon dioxide layer;

dry-etching a sloped-walled via hole in the polyimide;

dry-etching the hole all the way through to the metal layer, but without significantly enlarging the hole further in width; and

etching the hole to remove any residue of polyimide material, and to remove the upper layer of silicon dioxide.

4,495,221

VARIABLE RATE SEMICONDUCTOR DEPOSITION PROCESS

Eliot K. Broadbent, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Oct. 26, 1982, Ser. No. 436,863

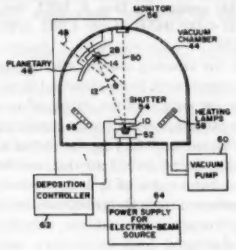
Int. Cl.³ B05D 5/12

U.S. Cl. 427—88 **10 Claims**

1. A method of forming a layer of an electically conductive material on a surface of a semiconductor body wherein the material substantially consists of aluminum with no more than 4% by weight of copper and no more than 4% by weight of silicon, characterized by the steps of:

initially directing atoms of the material toward the surface to accumulate there at a potentially variable first deposition rate whose average value R_{1AVG} is not greater than 10 angstroms/second on substantially non-inclined portions of the surface and is sufficiently less than the average value R_{2AVG} of a potentially variable second deposition

rate that I_{1AVG}/R_{1AVG} is not greater than one half I_{2AVG}/R_{2AVG} where I_{AVG} and I_{2AVG} are the average nucleation rates of atoms of the material on the non-inclined portions at the first and second deposition rates, respectively; and



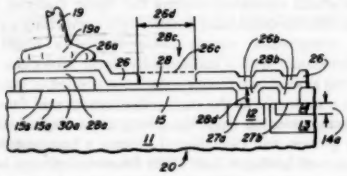
subsequently directing atoms of the material toward the surface at the second deposition rate to increase the average thickness of the layer to a selected thickness, the temperature of the body being largely the same during both steps of directing.

4,495,222

METALLIZATION MEANS AND METHOD FOR HIGH TEMPERATURE APPLICATIONS

George F. Anderson, Tempe, and Dan L. Burt, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1983, Ser. No. 549,354
Int. Cl.³ H01L *21/28*
U.S. Cl. 427—89 **5 Claims**



1. In a process for forming bonding pads suitable for attachment of external bonding means, on an electrical device having a resistive barrier layer beneath said pads and on a substrate, the improvement comprising inserting between said substrate and said resistive barrier layer an adhesion layer comprising a material which forms intermetallic compounds with said resistive barrier layer and comprises an element in common with said substrate.

4,495,223

PROCESS FOR PHOSPHATING ASBESTOS FIBERS

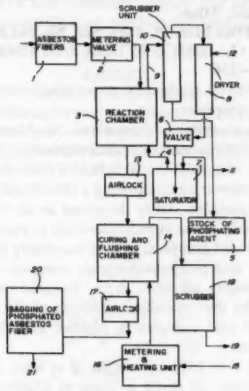
Jean-Marc Lalancette; Marcel Cossette, and Pierre Delvaux, all of Sherbrooke, Canada, assignors to Societe Nationale de L'Amiante, Quebec, Canada

Filed Feb. 22, 1984, Ser. No. 582,474
Int. Cl.³ B05D *7/00*; C03B *37/00*; C23C *11/00, 13/00*
U.S. Cl. 427—215 **6 Claims**

1. In a process for phosphating asbestos fibers by contacting asbestos fibers with a gaseous phosphorus chloride, the improvement which comprises,

(a) countercurrently circulating in a closed system a gaseous phosphorus chloride in a first reaction chamber at near atmospheric pressure through a mass of substantially water-free asbestos fibers having a loose density between 15 and 325 kg/m³,

(b) adsorbing the gaseous phosphorus chloride on said asbestos fibers at a temperature in a range between the boiling temperature of the phosphorus chloride at atmospheric pressure and 200° C. above the boiling temperature of the phosphorus chloride for a period of time varying between 0.2 and 4 hours, whereby phosphated asbestos fibers are obtained,



(c) curing while displacing said phosphated asbestos fibers in a second chamber for a period of from 0.1 to 6 hours at a temperature ranging from the boiling point of the phosphorus chloride and 240° C. above the boiling point of the phosphorus chloride, and

(d) flushing the cured phosphated asbestos fibers to remove therefrom any unreacted phosphorus chloride, volatile and toxic by-products produced during the reaction of said asbestos fibers with the phosphorus chloride and recovering said cured phosphated fibers.

4,495,224

METHOD FOR PREPARING IMPROVED MOLDING MATERIALS FROM COATED FINE PARTICULATE EXPANDABLE STYRENE POLYMERS AND APPLICATION OF THE COATED PRODUCTS

Josef-Karl Rigler, Recklinghausen; Horst Leithäuser, and Heinz Osterhoff, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,906
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239563; May 11, 1983, 3317169
Int. Cl.³ B05D *7/00*; C08J *9/22*
U.S. Cl. 427—222 **12 Claims**

1. In a method for coating fine particulate expandable styrene polymers with glycerin esters of long chain fatty acids, the improvement comprising:

(a) introducing said fine particulate expandable styrene polymers into a closed mixing vessel;

(b) preparing organosols of said glycerin esters having 14 to 24 carbon atoms in non-solvent aliphatic hydrocarbons having 3 to 8 carbon atoms, said glycerin esters being in pulverulent form and having a glycerin monoester proportion of about 10 to 40% by weight and a particle size less than 100 microns;

(c) adding said organosols to said fine particulate expandable styrene polymers with mixing;

(d) removing said non-solvent aliphatic hydrocarbons by reducing the pressure in said mixing vessel; and

(e) separating said fine particulate expandable styrene polymers coated with said glycerin esters.

4,495,225

METHOD AND COMPOSITION FOR THE PREVENTION OR INHIBITION OF CORROSION

Stanley J. Ciuba, Burnsville, and Michael J. Bartelme, III, Richfield, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Mar. 21, 1984, Ser. No. 591,676
Int. Cl.³ B05D 3/02; C09K 3/00; C04B 9/02
U.S. Cl. 427—236 30 Claims

1. An improved method of preventing corrosion on a surface, which comprises:

(a) forming a coating of from about 2 to 15 mils thick on the surface, with a composition comprising:

(i) about 10 to 80% by weight of a rust-inhibitive, grease-like concentrate comprising a thixotropic inorganic/organic complex stably dispersed in an essentially inert liquid oily phase in an amount not to exceed 4 parts, per part of said complex, of said essentially inert liquid oily phase, said inorganic/organic complex comprising an over-based alkaline earth organic sulfonate salt, whereby the crystalline structure of the inorganic portion of said complex is platelet and film-forming in character;

(ii) about 5 to 25% by weight of at least one drying oil, said drying oil being miscible in a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof, boiling at temperatures above 150° C.;

(iii) about 0.03–0.6% by weight metal, provided by a first metal drier selected from the group consisting of copper carboxylate compounds, rare earth carboxylate compounds and mixtures thereof;

(iv) about 0.1 to 2.2% by weight metal, provided by a second metal drier consisting of zinc carboxylate compounds;

(v) about 20 to 60% by weight naphthenic or straight chain paraffinic oils or mixtures thereof;

(vi) about 2 to 15% by weight petrolatum; and

(b) curing the coating.

21. A corrosion-inhibiting composition which comprises:

(a) about 10 to 80% by weight of a rust-inhibitive, grease-like concentrate comprising a thixotropic inorganic/organic complex stably dispersed in an essentially inert liquid oily phase in an amount not to exceed 4 parts, per part of said complex, of said essentially inert liquid oily phase, said inorganic/organic complex comprising an over-based alkaline earth organic sulfonate salt, whereby the crystalline structure of the inorganic portion of said complex is platelet and filmforming in character;

(b) about 5 to 25% by weight of at least one drying oil, said drying oil being miscible in a diluent oil selected from the group consisting of aliphatic hydrocarbon diluents, cycloaliphatic hydrocarbon diluents, aromatic hydrocarbon diluents, and mixtures thereof, boiling at temperatures above 150° C.;

(c) about 0.03 to 0.6% by weight metal provided by a first metal drier selected from the group consisting of copper carboxylate compounds, rare earth carboxylate compounds, and mixtures thereof;

(d) about 0.1 to 2.2% by weight metal provided by a second metal drier selected from the group consisting of zinc carboxylate compounds;

(e) about 20 to 60% naphthenic or straight chain paraffinic oils; and

(f) about 2 to 15% petrolatum.

4,495,226

METHOD FOR PREPARING SILICONE-TREATED STARCH

Jari K. Smith, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 395,555, Jul. 6, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 558,212
Int. Cl.³ A21D 4/00; B65B 55/00; C08L 3/00; B32B 9/04
U.S. Cl. 427—326 22 Claims

1. A method for treating starch, said method comprising contacting said starch with from about 0.1% to about 15% by weight, based on the weight of the starch, of an organosiloxane polymer, said organosiloxane polymer consisting essentially of three or more siloxane units having the formula $R_aSiO_{(4-a)/2}$, said siloxane units being joined to one another by siloxane bonds, wherein a has a value of 0, 1, 2 or 3 and R is a silicon-bonded radical selected from the group consisting of hydrocarbon radicals, hydrocarbonoxy radicals, substituted hydrocarbon radicals, substituted hydrocarbonoxy radicals, and the hydroxyl radical, with the proviso that any hydroxyl radicals are present only on terminal $R_aSiO_{(4-a)/2}$ units, said contacting being done in water, at a temperature of from about 60° C. to about 98° C. for a period of time at least 60 seconds in duration.

4,495,227

FOAMABLE SILICONE-CONTAINING COMPOSITION FOR TREATMENT OF FABRIC MATERIALS

Masaki Tanaka, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,202
Claims priority, application Japan, Apr. 26, 1982, 57-69837
Int. Cl.³ B05D 3/02; C08J 9/00, 9/32; C08G 77/00
U.S. Cl. 427—373 6 Claims

5. A method for the water-proofing treatment of a fabric material which comprises coating the fabric material with a foamable silicone-containing composition comprising a curable silicone composition mainly composed of a liquid diorganopolysiloxane with a substantially linear molecular structure having at least two functional groups bonded to the silicon atoms in a molecule as the base polysiloxane, said functional groups being selected from the group consisting of silanolic hydroxy groups, and two alkenyl groups; a liquid organosilicon compound having at least three functional groups bonded to the silicon atoms, said functional groups being selected from the group consisting of hydrogen and hydrolyzable groups; and a condensation catalyst and a blowing agent which is a low-boiling organic liquid encapsulated in a polyvinylidene chloride film in the form of microcapsules, in an amount from 1 to 200 parts by weight per 100 parts by weight of the said curable silicone composition and heating the thus coated fabric material to effect curing of the curable silicone composition and simultaneous foaming of the composition.

4,495,228

HYDRAULIC CEMENT COMPOSITION AND METHOD FOR USE AS PROTECTIVE COATING FOR SUBSTRATES

Charles E. Cornwell, 7104 Marian Dr., Alexandria, Va. 22307

Continuation-in-part of Ser. No. 294,206, Aug. 19, 1981, abandoned. This application Nov. 16, 1982, Ser. No. 442,120
Int. Cl.³ B05D 3/02; C04B 7/02
U.S. Cl. 427—385.5 4 Claims

1. A corrosion resistant and fireproof coating composition consisting essentially of a hydraulic cement, water reducer, thixotropic agent, finely divided minerals, color pigments and combined with water to make a coating suitable for application on various substrates.

4,495,229
ONE-COMPONENT, HEAT-CURING POLYURETHANE-COATINGS, STABLE IN STORAGE

Elmar Wolf, Recklinghausen, and Felix Schmitt, Herten, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls A.G., Marl, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,786

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3231558

Int. Cl.³ B05D *3/02;* **C08G** *18/81, 18/10, 18/32*

U.S. Cl. 427—388.2 **12 Claims**

1. A polyurethane one-component heat-curing coating which is stable in storage and is hardened above a temperature of about 120° C., comprising a polyol compound having a low glass transition temperature, and a blocked polyisocyanate compound, wherein said blocked polyisocyanate compound is the reaction product of a polyisocyanate compound and a sterically hindered secondary amine compound having the formula:

wherein R is selected from the group consisting of a hydrogen atom, C_3–C_9 alkyl radical, unsubstituted cycloalkyl radical, cycloalkyl radical substituted by C_1–C_4 alkyl radicals, or heteroatom-containing cycloalkyl radical, wherein each R is identical to or different from each other; R^1 is selected from the group consisting of alkyl radical or cycloalkyl radical, wherein each R^1 is identical to or different from each other; or R and R^1 are chemically bonded therebetween, thereby forming a ring structure.

12. A method of producing a high quality object made of metal, glass or plastic which comprises applying the polyurethane one-component heat-curing coating of claim 1 to a surface of said object, and heating said object coated with said coating above a temperature of about 120° C. for a period of about 30 minutes to 30 seconds, thereby hardening said coating on the surface of said object.

4,495,230
NEEDLEWORK ART FORM

Rebecca A. Ellwein, 2213 Windy Pines Bend, Virginia Beach, Va. 23456

Filed Jun. 30, 1983, Ser. No. 509,303

Int. Cl.³ B44F *3/00;* **G09B** *19/20*

U.S. Cl. 428—13 **12 Claims**

1. A needlepoint art form which can be provided both in kit form as well as a finished product, comprising in combination:

a needlepoint base in the form of an apertured flexible substrate to which colored needlepoint yarns are applied by needlepoint operations;

a design imprinted on said base within a marginal outline, said design further including color coded areas serving as guides for correspondingly colored yarns;

said design further including a predetermined single relatively small but nevertheless visually dominant feature area defining an applique outline which is less than the overall size of said design and which is also to be filled with yarn; and

a single decorated three dimensional solid applique comprising but a part of said design, formed by molding, sculpturing and the like, and having a perimeter corresponding to the outline of said dominant feature area affixed thereto over said yarn following needlepoint application.

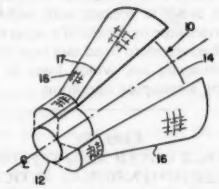
4,495,231
FIBER COMPOSITE

A. Theodore Laskaris, Danvers, and Paul J. Roy, Lowell, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Sep. 29, 1982, Ser. No. 427,085

Int. Cl.³ B32B *3/10, 5/12, 9/00*

U.S. Cl. 428—36 **7 Claims**



1. An improved fiber reinforced composite, said fiber reinforcement comprising:

a first layer comprising a plurality of elongate flexible fabric segments arranged together in an abutting side-by-side relationship defining an elongate irregularly shaped body shell form and having a plurality of continuous longitudinal yarns extending axially the length of each fabric segment, and

a second layer comprising a continuous yarn wound peripherally upon said first layer and oriented substantially orthogonally with said longitudinal yarns of said first layer.

4,495,232
STAMPING FOILS AND METHODS

Herbert Bauser, Stuttgart; Edmund Kurz, Magstadt; Bernd Schindler, Stuttgart; Klaus Zerweck, Leonberg; Thomas Bolch, Heilbronn; Andreas Haller, Villingen-Schwenningen, and Theo Mager, Bad Dürrheim, all of Fed. Rep. of Germany, assignors to Irion & Vosseler GmbH & Co. & Zahlerfabrik, Schwenningen, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,068

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3116078

Int. Cl.³ B32B *7/10;* **C09J** *7/02*

U.S. Cl. 428—41 **23 Claims**

1. A stamping foil for producing electrically conductive circuits on an electrically insulating or poorly conductive substrate;

said foil being bondable to said substrate in areas activated

by compression with a stamping die or stereotype and comprising an electrically conductive layer having a generally decorative or graphic function and having a thickness of between 10 to 35 microns to achieve the required electrical function(s);

said foil being endowed with sufficiently low shear strength to permit sharp separation of said activated areas from unactivated areas of the foil following a stamping operation;

said structure of said conductive layer consisting essentially of fibrous, fibrous-granular or fibrils whose axes are oriented at approximately right angles to the surfaces of said foil and having a diameter between 0.5 and 2 microns; and

a bonding layer adjacent to said conductive layer;

said bonding layer being activatable by compression or heating with said stamping die or stereotype;

whereby said bonding layer effects adhesion of said conductive layer to said substrate in the activated areas.

7. The foil of claim 1, wherein said bonding layer comprises a melting glue which rapidly solidifies and bonds said conductive layer to said substrate in the activated areas immediately following a hot-stamping operation.

8. The foil of claim 1 or 7, wherein the side of said conductive layer which is not in contact with said bonding layer is attached to a carrier tape by means of a separating layer which has sufficient adhesiveness to bond said tape to said conductive layer prior to stamping and which loses its adhesiveness in areas activated by a stamping operation.

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REMOVABLE COVER ADAPTED TO COVER THREE-DIMENSIONAL ARTICLES

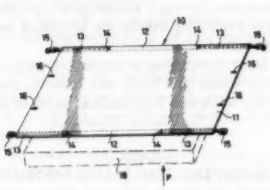
Piero Bassetti, Milan, Italy, assignor to Bassetti, S.p.A., Milan, Italy

Filed Feb. 2, 1984, Ser. No. 576,319

Claims priority, application Italy, Feb. 14, 1983, 20800/83 [U]

Int. Cl.³ B32B *3/06*

U.S. Cl. 428—81 **5 Claims**



1. A cover made of a piece of fabric or non-woven fabric essentially polygonal in shape, adapted to enwrap 3-D articles, characterized by the fact that it features on two end flaps of two opposed sides a hemming of said flaps which forms a slide-seating within which corrugating elements are placed, each of the two free flaps of said cover also featuring two eyelets adapted to receive said corrugating elements.

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WEATHER STRIP FOR AUTOMOBILES

Masahiro Tominaga, Aichi-ken; Kenichi Nakamura, Ichinomiya-shi, Aichi-ken, and Kunio Mishima, Inazawa-shi, Aichi-ken, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

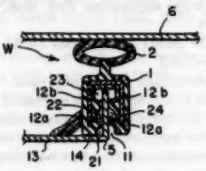
Filed Sep. 30, 1982, Ser. No. 428,612

Claims priority, application Japan, Oct. 27, 1981, 56-159762[U]

Int. Cl.³ E06B *7/16*

U.S. Cl. 428—122 **2 Claims**

1. A weather strip for a vehicle having a body flange to be sealed, comprising a strip body shaped in the form of a channel having an opening extending in the longitudinal direction thereof, the opening receiving said body flange therein, and at least one sealing lip formed on an inner surface of said strip body, said sealing lip extending in the longitudinal direction of and projecting inwardly of said strip body, said weather strip including at least one communicating portion, said communicating portion including means defining at least one interior



area from which a portion of said sealing lip has been cut away to thereby define an opening in said at least one sealing lip and means below said opening in said sealing lip for providing communication between said opening in said sealing lip and the outside of said strip body to allow water which may have accumulated within said strip body to drain outside of the vehicle.

4,495,235

PROCESS FOR THE PREPARATION OF FIBER-REINFORCED FLAT BODIES CONTAINING A HARDENABLE BINDER

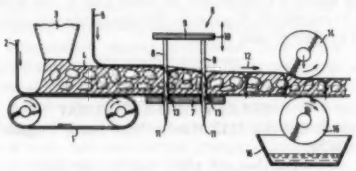
Guenter H. Tesch, 22, Rte. de la Heitera, Fribourg, Switzerland (CH 1700)

Filed Jul. 26, 1982, Ser. No. 402,086

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 3129509; Switzerland, Jan. 29, 1982, 550/82

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—137 **33 Claims**



1. A process for the preparation of fiber-reinforced composite flat bodies containing three layers wherein a core layer containing a hardenable binder which is not hard is introduced between outer layers comprising a backing layer and a cover layer and wherein at least one outer layer is a fiber layer comprising fibers which are capable of active needle bonding, needle bonding at least said outer layer prior to the hardening of the binder so that (at least two) all three layers are held together by the fibers in the deformable state and when the binder is hardened providing the body with additional elasticity other than the elasticity of the hardened core layer.

4,495,236

PRESSURE-SENSITIVE ELECTRICALLY CONDUCTIVE COMPOSITE SHEET

Masaaki Obara, Atsugi; Yoshio Tajima, Ito, and Yukiji Suzuki, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 555,972

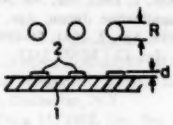
Claims priority, application Japan, Nov. 29, 1982, 57-207649

Int. Cl.³ B32B *3/10*; H01B *1/00*

U.S. Cl. 428—172 **1 Claim**

1. A pressure-sensitive, electrically conductive composite

sheet which comprises an electrically conductive elastomer sheet obtained by dispersing electrically conductive particles in an elastomer high-molecular weight material; a dot pattern



disposed over at least one surface of said electrically conductive elastomer sheet, said dot pattern being composed of an electrically insulating material and having the following requirements:

Diameter of dots	R = 0.3 to 1.5 mm
Thickness of dots	d = 0.01 to 0.10 mm
Distance between centers of neighboring dots	l = (0.1 to 3.0) + R

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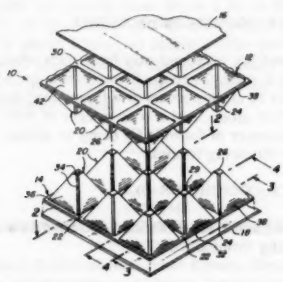
PYRAMIDAL CORE STRUCTURE

Fred R. Patterson, 303 Huntingdon Rd., Union, N.J. 07083

Filed Jun. 10, 1983, Ser. No. 503,238

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—178 **9 Claims**



1. A pyramidal core structure which comprises:

(a) two substantially identical panels, each said panel having continuous hollow pyramid shapes embossed in both longitudinal and latitudinal directions to define four-sided embossments projecting from the panels with orthogonal narrow channels between them crossing at intersections, each of the pyramid shapes having slightly beveled edges at all four corners and a slightly truncated top so that one of said panels can be inverted and mated in either of two orthogonal directions with the other of said panels in an appropriate manner to form a core structure; and,

(b) means for integrally bonding said two panels together along mating beveled edges and where a truncated top sits into an intersection of crossing channels, so as to form the core structure into a composite integral structure.

4,495,238

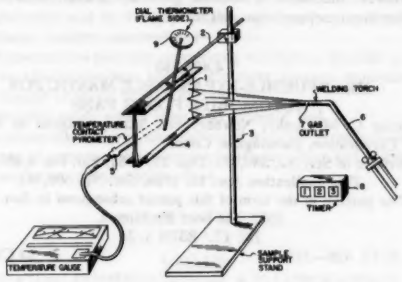
FIRE RESISTANT THERMAL INSULATING STRUCTURE AND GARMENTS PRODUCED THEREFROM

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,025

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—215 **20 Claims**



1. A porous, flexible and pliant fire and heat resistant composite structure comprising:

at least one outer layer of a fire resistant fabric and one or more layers of a heat resistant material comprised of a mixture of from 50 to about 94 percent by weight of inorganic microfibers and from about 50 to about 6 percent by weight of a heat resistant binding agent, said composite structure having a Thermal Resistance of at least about 25 seconds.

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CAMOUFLAGE MATERIALS HAVING A WIDE-BAND EFFECT AND SYSTEM INCORPORATING SAME

Gunter Pusch, Bannholzweg 12, 6903 Neckargemund 2; Alexander Hoffmann, Heidelberger Str. 24, 6901 Mauer, and Dieter E. Aisslinger, Heidestr. 54, 6222 Geisenheim, all of Fed. Rep. of Germany

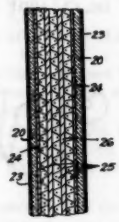
Continuation-in-part of Ser. No. 226,787, Jan. 21, 1981, , which is a continuation of Ser. No. 942,703, Aug. 23, 1978, abandoned.

This application Dec. 16, 1982, Ser. No. 459,354

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750919

Int. Cl.³ B32B *23/02*

U.S. Cl. 428—192 **17 Claims**



1. A camouflage material having a wide-band effect ranging from the visual portion of the spectrum up through the radar region of the spectrum, said material comprising at least a base layer, a homogenous metal layer on said base layer reflective in the range of terrestrial thermal radiation as well as in the radar region of the spectrum and having a specific surface resistivity of not more than 0.5 to 10 ohms per square and a camouflage paint applied on said reflective metal layer, said paint contain-

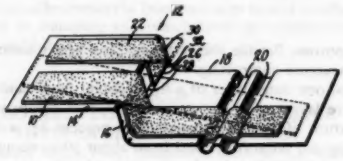
ing pigments having reflective properties in the visible and near IR spectral regions that are similar to the natural background and containing a binder having high transparency characteristics in the spectral regions of the atmospheric windows II (3–5 μm) and III (8–14 μm) and wherein the emissivity of the camouflage paint in windows II and III varies over the surface of the material and varies between 50 and 90% in window II and between 60 and 95% in window III and wherein the metal is selected from the group consisting of aluminum, copper, zinc and its alloys.

4,495,240

HEAT-FUSIBLE-EXPANDABLE MASTIC FOR AUTOMOBILE FLOOR PANS

Bruce C. McCarthy, Newburyport, Mass., assignor to USM Corporation, Farmington, Conn.

Division of Ser. No. 336,091, Dec. 31, 1981, Pat. No. 4,456,705. This application Apr. 16, 1984, Ser. No. 600,781
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—319.1 **13 Claims**



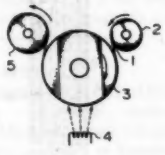
1. A laminate comprising a mastic sheet material softenable into conformnity with a contoured metal surface but resistant to flow and comprising from about 25 to about 65 percent by weight of the mastic material of mineral filler, from about 2 to about 15 percent by weight of an elastomer, from about 2 to about 20 percent by weight of asphalt from about 20 to about 60 percent by weight of a polymeric modifier and an effective amount of a heat activatable foaming agent and a substrate bonded to at least on surface of the mastic sheet material.

4,495,241

MAGNETIC TAPE

Kenzaburo Iijima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 4, 1983, Ser. No. 455,525
Claims priority, application Japan, Jan. 6, 1982, 57-1256
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—328 **14 Claims**



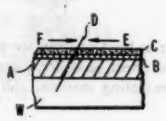
1. Magnetic tape comprising
a base layer formed by solution treatment of an age-hardening type magnet alloy material and
a ferromagnetic surface layer which is formed on one surface side of said base layer by age-hardening of said magnet alloy material and has a thickness in a range from 0.1 to 2 micronmeters.

4,495,242

MAGNETIC RECORDING MEDIUM

Yoshihiro Arai, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1982, Ser. No. 364,271
Claims priority, application Japan, Apr. 2, 1981, 56-49883; Apr. 2, 1981, 56-49885; Apr. 2, 1981, 56-49886
Int. Cl.³ B05D *5/12*
U.S. Cl. 428—336 **4 Claims**



1. A magnetic recording medium, comprising:
a non-magnetic support;
a thin film of a magnetic metal evaporated on the non-magnetic support, wherein the surface part of the film is converted to the metal oxide layer, wherein the total thickness of the thin film of magnetic metal ranges from about 200 Å to 20,000 Å, and the thickness of the metal oxide layer is less than 300 Å; and
a protecting film composed of a high molecular weight compoünd, a higher fatty acid, a fatty acid ester or a combination thereof, laminated on said metal oxide layer, wherein the thickness of the protecting film is less than 500 Å.

4,495,243

RELEASE AGENT AND PRODUCT

Takaji Kishi, Itami, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1980, Ser. No. 180,010
Claims priority, application Japan, Aug. 24, 1979, 54-108483
Int. Cl.³ C09J *7/02*
U.S. Cl. 428—352 **8 Claims**

1. A release agent comprising:
(A) a polymer of at least one vinyl monomer of the formula

$$CH_2=CR_1COO(CH_2CHR_2O)_nCONHR \quad (I)$$

wherein R_1 and R_2, independently from each other, represent hydrogen or a methyl group, R represents an alkyl group having at least 12 carbon atoms or a fluoroalkyl group having at least 6 carbon atoms, and n is an integer of from 1 to 6, said vinyl monomer of formula (I) being an adduct of a compound of the following formula

$$CH_2=CR_1COO(CH_2CHR_2O)_nH \quad (II)$$

wherein R_1, R_2 and n are as defined above, with a compound of the following formula

$$RNCO \quad (III)$$

wherein R is as defined above,
(B) a copolymer of at least one vinyl monomer of general formula (I) above and at least one other monomer selected from the group consisting of stearyl acrylate, stearyl methacrylate, stearyl acrylamide, stearyl methacrylamide, vinyl stearate, stearyl vinyl ether, methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, vinyl acetate, styrene, 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, diethylene glycol monomethacrylate, tetraethylene glycol monomethacrylate, polypropylene glycol monomethacrylate, acrylic acid, methacrylic acid, monoesters of maleic acid, monoesters of itaconic acid, crotonic acid, maleic anhydride, glycidyl methacrylate acrylonitrile, methyl vinyl ketone, and N-vinyl pyrrolidone, or
(C) a mixture of said polymer (A) and said copolymer (B).

2. A product prepared by coating the release agent of claim 1 on the surface of a release paper.

4,495,244

CONTINUOUS FILAMENT SLUB YARN

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,932
Int. Cl.³ D02G 3/00, 3/02, 3/36
U.S. Cl. 428—399 3 Claims

1. Continuous filament yarn of textile utility wherein said yarn has slubs formed at randomly spaced intervals along the length of the yarn, and wherein each filament has a main body section extending along the length of the filament and at least one wing member extending from said main body section along the length of the filament, said wing member rising and falling in wave-like manner along said main body section only within the area of said randomly spaced intervals.

4,495,245

INORGANIC FILLERS MODIFIED WITH VINYL ALCOHOL POLYMER AND CATIONIC MELAMINE-FORMALDEHYDE RESIN

David W. Zunker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 14, 1983, Ser. No. 513,879
Int. Cl.³ B32B 27/20, 5/16; C08K 9/00, 9/04
U.S. Cl. 428—403 10 Claims

1. A modified filler prepared by contacting inert, particulate, mineral filler with aqueous solution of vinyl alcohol polymer and aqueous colloidal dispersion of cationic melamine-formaldehyde resin sequentially, in either order, or concurrently in one step by use of preformed aqueous vinyl alcohol polymer/cationic melamine-formaldehyde interaction product, the weight ratio of vinyl alcohol polymer to cationic melamine-formaldehyde resin being from about 0.3:1 to about 8:1, at a temperature of up to about 100° C. for a period of from about 1 minute to about 1 hour, to obtain a filler having adsorbed thereon from about 0.01 to about 3%, based on dry filler weight, of each of vinyl alcohol polymer and cationic melamine-formaldehyde resin.

4,495,246

ACICULAR FERROMAGNETIC CHROMIUM DIOXIDE PARTICLES

Werner Steck, Ludwigshafen; Jenoe Kovacs, Hessheim; Norbert Mueller, Friedelsheim, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 545,938
Int. Cl.³ H01F 10/02
U.S. Cl. 428—403 4 Claims

1. Acicular ferromagnetic chromium dioxide particles having a pH greater than 4, said particles having been prepared by suspending acicular ferromagnetic chromium dioxide particles in water, adding an aqueous solution of an alkali metal sulfite or bisulfite and an aqueous solution of an iron (II) salt to the particle suspension, at a temperature of from 10° to 70° C., maintaining the pH of the suspension at from 4 to 11 by adding additional base to the suspension and thereafter separating the solid particles from the suspension, washing the particles with water and drying the particles at a temperature below 130° C.

4,495,247

PRIMER COATING COMPOSITION OF A FLUOROCARBON POLYMER AND AN AMINO ALKYL ALKOXY SILANE

Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,704
Int. Cl.³ B32B 27/00, 9/00; C08L 27/12; C08K 3/10
U.S. Cl. 428—422 14 Claims

1. A composition consisting essentially of about 10–50% by weight binder and 50–90% by weight organic solvent, wherein the binder consists essentially of

a fluorocarbon polymer comprising vinylidene fluoride and hexafluorpropylene having a weight average molecular weight of about 50,000–300,000;

a metallic oxide which is an acid acceptor and

an amino alkyl alkoxy silane selected from the group consisting of gamma amino propyl trimethoxy silane and gamma amino propyl triethoxy silane.

4,495,248

COATING COMPOSITION OF A FLUOROCARBON POLYMER AND A POLYAMINE CURING AGENT

Joseph A. Vasta, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

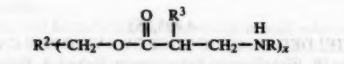
Continuation-in-part of Ser. No. 509,703, Jun. 30, 1983, abandoned. This application Feb. 27, 1984, Ser. No. 583,977
Int. Cl.³ C08K 3/10; C08F 8/32, 8/42; B32B 27/00
U.S. Cl. 428—422 24 Claims

1. A coating composition comprising about 10–70% by weight binder and 30–90% by weight of an organic solvent; wherein the binder comprises:

a fluorocarbon polymer comprising vinylidene fluoride and hexafluoropropylene having a weight average molecular weight of about 50,000–600,000,

a metallic oxide which is an acid acceptor; and

a curing agent of the formula



where R is R^1NH_2 and R^1 is aliphatic or cycloaliphatic hydrocarbon radical, R^2 is C or a hydrocarbon group, R^3 is H or CH_3, X is 3 when R^2 is a hydrocarbon group and X is 4 when R^2 is C.

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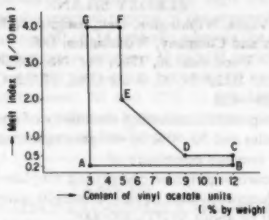
HEAT SHRINKABLE MULTI-LAYERED LAMINATE FILM

Masaki Ohya; Yoshiharu Nishimoto, and Kengo Yamazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Feb. 4, 1983, Ser. No. 464,018
Claims priority, application Japan, Feb. 19, 1982, 57-25691
Int. Cl.³ B32B 27/30, 27/32
U.S. Cl. 428—516 6 Claims

1. A heat-shrinkable laminate film excellent in gas-barrier property, oil-resistance and peel-resistance, comprising a core layer made of a saponified copolymer of ethylene and vinyl acetate, two outer layers made of a resin selected from mixtures of 80 to 30% by weight of a copolymer of ethylene and vinyl acetate having a crystal melting point in a range of 85° to 103° C. and 20 to 70% by weight of a linear low-density polyethylene having a crystal melting point in a range of 110° to 125° C. or a copolymer of propylene and ethylene having a crystal melting point of 126° to 155° C., and two adhesive

layers disposed between the core layer and the outer layers, the ratio of the weight of the copolymer of ethylene and vinyl



acetate to the total weight of the polymers of the two outer layers being larger than 0.4.

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ANION EXCHANGE RESIN OF SURFACE FUNCTIONAL TYPE AND THE PROCESS FOR PRODUCING THE SAME

Takaharu Itagaki, Yokohama; Hidenaga Ouchi, Komae, and Akihiro Shimura, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,593
Claims priority, application Japan, Aug. 27, 1982, 57-148697
Int. Cl.³ B32B *27/08, 5/16*
U.S. Cl. 428—520 **22 Claims**

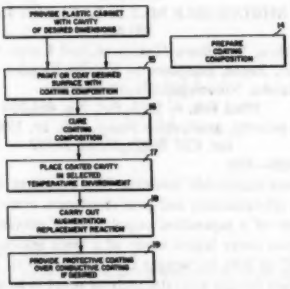
1. An anion exchange resin of the surface functional type having a structure in which the surface of a lipophilic cross-linked polymer matrix is coated with a water insoluble hydrophilic polymer layer having amino groups or quaternary ammonium groups, said hydrophilic polymer layer not being chemically bonded to said lipophilic cross-linked polymer matrix and being insoluble in water by virtue of the cross-linking within itself which occurs when said amino and quaternary ammonium groups are introduced into the hydrophilic polymer.

4,495,251

SHIELDED PLASTIC MICROWAVE OVEN CAVITY

Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Clifton Park, both of N.Y., and Peter I. Cohen, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 220,332, Mar. 11, 1981, Pat. No. 4,385,082. This application Feb. 14, 1983, Ser. No. 466,175
Int. Cl.³ B22F *7/04*; B05D *5/12*
U.S. Cl. 428—548 **10 Claims**



1. A plastic microwave oven cabinet having a low resistivity coating on at least a portion of at least one of the inside and outside surfaces thereof, said coating comprising a cured polymer containing therein a first finely divided metallic composition with particles of size greater than about 3 microns and less than about 50 microns and a second metal; the contents of the metal of said first metallic composition and second metal in said cured polymer being about 60–80%, by volume; and a contiguous layer of said second metal on said cured polymer, wherein said second metal is below the metal of said first metallic composition in the activity series.

4,495,252

WEAR-RESISTANT METALLIC ARTICLE

James W. O'Brien, Cleveland Heights, and Frank Spevak, Maple Heights, both of Ohio, assignors to Imperial Clevite Inc., Glenview, Ill.

Filed Jan. 16, 1980, Ser. No. 112,525
Int. Cl.³ B22F *7/08, 7/04*; F16C *33/00*
U.S. Cl. 428—555 **10 Claims**

1. A method of producing a metallic substrate having bonded thereto a wear-resistant surface containing nickel aluminide in a copper base matrix with lead which process comprises the steps of:

(a) providing a metallic substrate;

(b) affixing a barrier layer of a metal selected from the group consisting of nickel, alloys of nickel, copper and alloys of copper to a surface of the metallic substrate;

(c) applying a layer of wear-resistant material over the surface of said barrier layer, with said wear-resistant material including a mixture of nickel aluminide and a copper base alloy;

(d) sintering said so-applied wear-resistant material at a temperature sufficient to cause it to become bonded to said substrate;

(e) compacting the sintered layer an amount sufficient to cause it to have a density near theoretical; and

(f) re-sintering said article at a temperature sufficient to cause the wear-resistant material to become bonded together and to the substrate.

6. A wear-resistant metallic article which comprises:

(a) a metallic substrate;

(b) a barrier layer of a metal selected from the group consisting of nickel, alloys of nickel, copper and alloys of copper bonded to a surface of the metallic substrate; and

(c) a layer of wear-resistant material bonded to the surface of said barrier layer, with said wear-resistant material including a mixture of nickel aluminide and copper base alloy with lead.

4,495,253

SOLDERABLE PLATED PLASTIC COMPONENTS AND PROCESS FOR PLATING

Hal P. Abel, Whittier, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 31, 1983, Ser. No. 499,748
Int. Cl.³ B29D *3/02*; B32B *15/08*
U.S. Cl. 428—624 **16 Claims**

1. A metal plated plastic article formed by a process comprising the steps of:

a. selecting a plastic having a deflection temperature and a melting temperature of at least 204° C. and having a predetermined amount of glass fill;

b. forming the plastic into the article shape;

c. roughening the surface of the article by means of physical abrasion;

d. exposing the roughened surface of the formed article to a chemical etch solution comprising ammonium bifluoride, nitric acid, and sulfuric acid;

e. chemically depositing a first layer of conductive metal on the chemically etched surface of the artcle; and

f. electrolytically depositing a second layer of metal on the first layer of conductive metal.

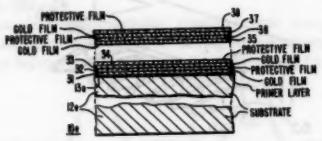
4,495,254
PROTECTIVELY-COATED GOLD-PLATED ARTICLE OF JEWELRY OR WRISTWATCH COMPONENT

Richard A. Hoffman, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 264,322, May 18, 1981, , which is a continuation-in-part of Ser. No. 185,655, Sep. 9, 1980, abandoned. This application May 21, 1984, Ser. No. 612,494

Int. Cl.³ C23C *15/00*

U.S. Cl. 428—632 **11 Claims**



1. As a new article of manufacture, a piece of jewelry or a wristwatch component that is composed of a base metal and is coated with a layer of gold or a gold alloy that has a thickness substantially less than 100,000 Angstroms and is protected from scratches and abrasion damage, when the jewelry piece or wristwatch component is in use, by a thin adherent substantially transparent film consisting essentially of an inert nonmetallic material that has;

a Knoop hardness in the range of from about 400 to about 2500 and is thus of sufficient hardness to be resistant to both scratches and abrasion,

a refractive index in the range of from about 1.4 to about 2.8,

said protective film having a thickness that is in the range of from about 14,000 to about 40,000 Angstroms and is also so correlated relative to the refractive index of the nonmetallic inert material comprising said film that the film, in addition to being substantially transparent, is (a) substantially devoid of discoloration due to optical interference effects that otherwise would be produced by incident light rays and thus alter the natural pleasing appearance of the underlying gold coated surface of the jewelry piece or wristwatch component and (b) is of sufficient thickness to protect the gold-coated surface of the jewelry piece or wristwatch component from abrasion damage and scratches when said jewelry piece or wristwatch component is in use and subjected to frequent human contact.

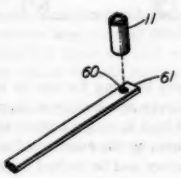
4,495,255
LASER SURFACE ALLOYING

Clifton W. Draper, Hopewell, and John M. Poate, Summit, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,290

Int. Cl.³ C23C *5/00*; **B05D** *3/06*; **B23K** *9/00*; **B32B** *15/00*

U.S. Cl. 428—669 **2 Claims**



1. A method of surface alloying, comprising the steps of:

depositing a 270 A. to 3500 A. thick coating of gold on a nickel substrate;

depositing a very thin layer of palladium having a thickness of about 300 A. on the gold coated substrate; and

raster scanning a plurality of laser pulses of such a length and power density at the coated substrate so as to melt portions of the gold, palladium and the nickel to form an alloy on the surface thereof to a depth of approximately 5,000 A., the alloy having a higher concentration of the gold coating material than the nickel material at the surface of the alloy.

2. An electrical connector having an electrical contact area which is a surface alloy formed by the method of claim 1.

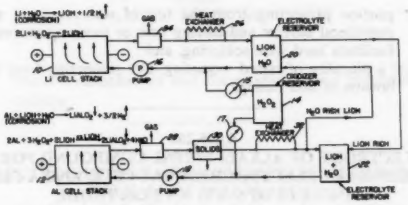
4,495,256
DUAL ELECTROCHEMICAL SYSTEM

James R. Moden, Bristol, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1984, Ser. No. 573,904

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—17 **4 Claims**



1. A method of increasing the energy density of two electrochemical systems by using the by-product of each system as one of the necessary ingredients of the reactants of the other system comprising the steps of:

providing a first reservoir having hydrogen peroxide therein;

providing at least one other reservoir having a lithium hydroxide electrolyte therein;

controllably adding hydrogen peroxide from said first reservoir and lithium hydroxide electrolyte from said other reservoir to a lithium cell stack for providing a electrochemical reactor that includes the formation of lithium hydroxide;

returning said formed lithium hydroxide to said other reservoir;

controllably adding hydrogen peroxide from said first reservoir and lithium electrolyte from said other reservoir to an aluminum cell stack for providing a electrochemical reaction that includes the formation of lithium aluminate and water; and

returning said formed water to said other reservoir.

4,495,257
HORIZONTAL BATTERY HOLDER FOR CYLINDER CELLS

Charles Engelstein, South Orange, N.J.; David L. Kassel, New York, and Harry Goodman, Rockville Centre, both of N.Y., assignors to Memory Protection Devices, Inc., Farmingdale, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,220

Int. Cl.³ H01M *2/100*

U.S. Cl. 429—100 **5 Claims**

1. A battery holder comprising:

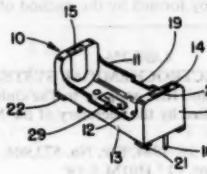
(a) a casing having a bottom end and a peripheral barrier means, the casing being disposed to receive a battery cell abutting the bottom and the peripheral barrier means, the casing being shaped such that its inner surface matches the contour of said cell;

(b) an electrically conductive terminal having one leg located in a recess in said peripheral barrier and another leg being resilient and contacting one pole of said battery when said battery is in place within said holder;

(c) another electrically conductive terminal with one leg located in another recess in said peripheral barrier and

another leg being resilient and contacting the other pole of said battery when said battery is in place within said holder;

(d) said electrically conductive terminals each having a



portion projecting from the top of said recess in said peripheral barrier and having one or more apertures to facilitate hard wire soldering, and

(e) a plurality of raised mounting tabs projecting from the bottom of said casing.

4,495,258

ELECTRODE OF ALKALI METAL COMPOUND FOR A SECONDARY ELECTROCHEMICAL CELL, AND A CELL INCLUDING SUCH AN ELECTRODE

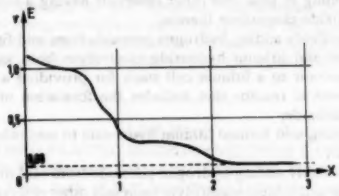
Alain Le Méhauté, Gif-sur-Yvette, and Claude Belin, Montpellier, both of France, assignors to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Feb. 24, 1984, Ser. No. 583,186

Claims priority, application France, Feb. 28, 1983, 83 03245

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—103 **14 Claims**



1. An electrode for a secondary electrochemical cell operating in a non-aqueous medium, wherein the active material is constituted by an alkali metal in the zero valent state which alkali metal is inserted into an insertion compound, the improvement wherein said insertion compound receiving said alkali metal has an ordered three-dimensional lattice structure and is constituted by at least one intermetallic compound having polyatomic anionic clusters with atoms chosen from the group constituted by gallium, boron and aluminum, and with structuring counter ions chosen from the group constituted by alkaline earth and alkali ions.

9. A secondary electrochemical cell operating in a non-aqueous medium and including a positive electrode, an electrolyte, and a negative electrode as defined in claim 1.

4,495,259

VIBRATION RESISTANT BATTERY

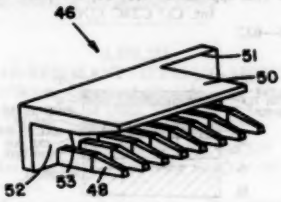
Toshio Uba, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Feb. 11, 1983, Ser. No. 465,735

Int. Cl.³ H01M *2/26, 2/14*

U.S. Cl. 429—161 **16 Claims**

1. In a battery composed of at least one electrochemical cell comprising a cell housing in which is disposed at least one positive electrode plate, at least one negative electrode plate, a plurality of projecting positive plate tabs and a connecting strap uniting the same, a plurality of projecting negative plate tabs and a connecting strap uniting the same, separator interposed between the positive and negative plates, and an electrolyte, the improvement comprising an electrode plate group vibration support means at least partially enveloping a connector strap and comprising a comb-like portion underlying the



strap in close proximity thereto and having teeth interposed between the projecting tabs associated with such strap, and a hood portion overlying the strap in close proximity thereto, and said cell being provided with means for limiting relative movement between the vibration support means and the cell housing.

4,495,260

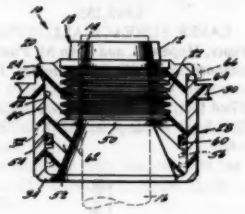
SLIDING SEAL LEAD BUSHING

James S. Hardigg, Conway, and E. Wayne Turner, Deerfield, both of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Apr. 7, 1983, Ser. No. 482,881

Int. Cl.³ H01M *2/22, 2/30*

U.S. Cl. 429—180 **13 Claims**



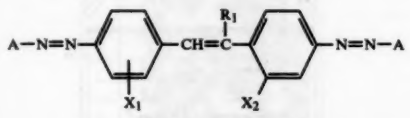
1. A molded integral bushing for use in sealing a battery terminal post to the cover of a battery comprising an annular member comprised of lead having a hollow interior shaped in a complementary manner to the exterior of said terminal post so that it can fit thereover and be melted thereto, said annular member having means defining at least one annular groove about the exterior thereof, a mantle formed of a synthetic material molded about the exterior of said annular member and extending a predetermined distance therebelow with that portion of the mantle positioned directly adjacent said annular member having a smooth exterior wall and sealing means positioned on the exterior of said mantle in the portion extending below said annular member for sealing the mantle to the battery cover.

4,495,261
ELECTROPHOTOGRAPHIC SUBSTITUTED P,P'-BISAZO DIPHENYL ACRYLONITRILE COMPOUNDS FOR PHOTORECEPTORS

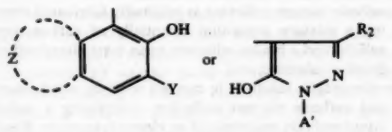
Jiro Takahashi; Tawara Komamura; Kiyoshi Sawada, all of Hachioji; Ssamu Sasaki, Hino; Satoshi Goto, Hachioji, and Akira Kinoshita, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,281
Claims priority, application Japan, Dec. 28, 1981, 56-213834
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 **11 Claims**

1. An electrophotographic photoreceptor comprising an electrically conductive support having formed thereon a light-sensitive layer containing a bisazo compound of formula (I):



(wherein R_1 is a cyano group, a chlorine atom or a bromine atom; X_1 is a halogen atom, an alkyl group, an alkoxy group or a cyano group; X_2 is a hydrogen atom, a halogen atom, an alkyl atom or an alkoxy group; A is



wherein Y is a carbamoyl group or a sulfamoyl group; Z is an atomic group necessary for forming an aromatic hydrocarbon ring or a heteroaromatic ring; R_2 is a hydrogen atom, an amino group, a carbamoyl group, a carboxy group or an ester group thereof; and A' is an aryl group).

4,495,262
PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY COMPRISES INORGANIC LAYERS

Masatoshi Matsuzaki, Hino; Toshinori Yamazaki, Hachioji; Isao Myokan, Hachioji; Tetsuo Shima, Hachioji, and Hiroyuki Nomori, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

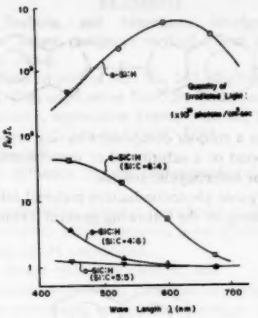
Filed Apr. 28, 1983, Ser. No. 489,317
Claims priority, application Japan, May 6, 1982, 57-75655
Int. Cl.³ G03G 5/082; B32B 7/12
U.S. Cl. 430—58 **29 Claims**

1. A photosensitive member which comprises a substrate, a second silicon carbide layer on said substrate, a silicon germanium photoconductive layer on said second silicon carbide layer, and a first silicon carbide layer on said silicon germanium layer;

said first silicon carbide layer comprising amorphous hydrogenated silicon carbide or amorphous fluorinated silicon carbide or amorphous hydrogenated and fluorinated silicon carbide;

said second silicon carbide layer comprising amorphous hydrogenated silicon carbide or amorphous fluorinated silicon carbide or amorphous hydrogenated and fluorinated silicon carbide; and

said silicon germanium photoconductive layer comprising at least one silicon germanium selected from the group consisting of amorphous hydrogenated silicon germanium, amorphous fluorinated silicon germanium, amorphous hydrogenated and fluorinated silicon germanium, amorphous hydrogenated silicon germanium carbide, amorphous fluorinated silicon germanium carbide and amorphous hydrogenated and fluorinated silicon germanium carbide.



4,495,263
ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING POLYAMIDE INTERLAYERS

Paul D. VanderValk, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,535
Int. Cl.³ G03G 5/14
U.S. Cl. 430—60 **13 Claims**

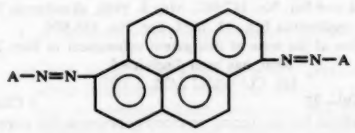
1. An electrophotographic element comprising a photoconductor layer overlying, in sequence, an electrically conducting layer, an interlayer comprising a polyamide having repeating units derived from caprolactam, and a support.

4,495,264
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER COMPRISING DISAZO COMPOUND

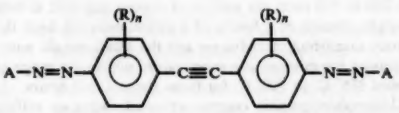
Hideyuki Takahashi, and Shozo Ishikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1984, Ser. No. 589,343
Claims priority, application Japan, Mar. 15, 1983, 58-41475; Mar. 15, 1983, 58-41476; Mar. 15, 1983, 58-41477
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—58 **41 Claims**

1. An electrophotographic photosensitive member having a photosensitive layer on or over an electrically conductive substrate, the photosensitive layer comprising an organic photoconductive material selected from the group consisting of the following general formulas (1), (2) and (3):

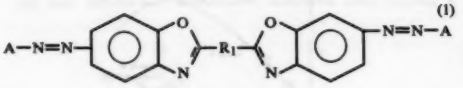

(1)

wherein A is a coupler component having aromaticity,


(2)

wherein A is a coupler component having aromaticity, R is

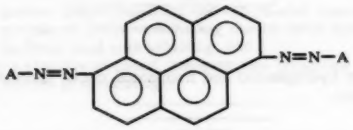
hydrogen, halogen, alkyl, or alkoxy, and n is an integer of 1 to 4,



(1)

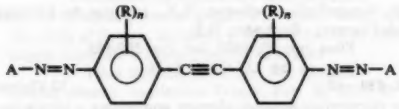
wherein A is a coupler component having aromaticity and R_1 is a single bond or a substituted or unsubstituted divalent hydrocarbon or heterocyclic residue.

17. An organic photoconductive material selected from the group consisting of the following general formulas (1), (2) and (3):



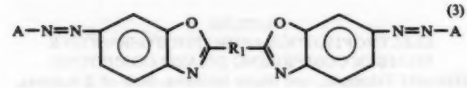
(1)

wherein A is a coupler having aromaticity,



(2)

wherein A is a coupler having aromaticity, R is hydrozen, halogen, alkyl, or alkoxy, and n is an integer of 1 to 4,



(3)

wherein A is a coupler having aromaticity and R_1 is a single bond or a substituted or unsubstituted divalent hydrocarbon or heterocyclic residue.

4,495,265

ELECTROPHOTOGRAPHIC COPPER DOPED CADMIUM SULFIDE MATERIAL AND METHOD OF MAKING

Sixdeniel Faria, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 128,330, Mar. 7, 1980, abandoned, and Ser. No. 147,902, May 8, 1980, abandoned. This application Feb. 12, 1981, Ser. No. 233,806

The portion of the term of this patent subsequent to Dec. 22, 2000, has been disclaimed.

Int. Cl.³ G03G *5/08, 5/087*

U.S. Cl. 430—95 **9 Claims**

1. A method for producing an electrophotographic copper-activated cadmium sulfide material, the method comprising:

(a) mixing copper-containing and cadmium chloride starting materials with cadmium sulfide in amounts corresponding to 200 to 300 parts per million of copper and 0.02 to 0.06 weight percent of a halide of a cation selected from the group consisting of cadmium and the alkali metals, and

(b) heating the mixture at a temperature within the range of about 375° C. to 500° C. for from about 1 to 5 hours.

4. Electrophotographic copper-activated cadmium sulfide material containing copper within the range of about 200 to 300 parts per million, halide in the range of about 0.02 to 0.06 weight percent, and having very good contrast voltage prepared by the method of claim 1.

4,495,266

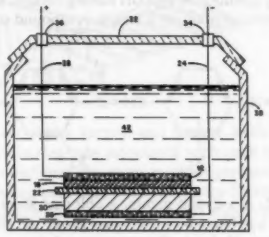
HIGH RATE ELECTROCHEMICAL CELL

Keith A. Klinedinst, Marlborough, and Carl R. Schlaikjer, Winchester, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 7, 1982, Ser. No. 376,057

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—105 **12 Claims**



1. An eletrochemical cell comprising

an oxidizable active anode material;

a cathode current collector as originally fabricated comprising a mixture consisting essentially of carbon, copper sulfide, and a binder adherent to an inert electrically-conductive substrate; and

an electrolytic solution, in contact with the anode material and cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute dissolved therein.

4,495,267

MAGNETIC TONER HAVING IMPROVED HUMIDITY DEPENDENCY

Nobuyasu Honda, Tenri; Toshiro Yamakawa, Osaka, and Toshimitsu Ikeda, Himeji, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 22, 1983, Ser. No. 477,660

Claims priority, application Japan, Mar. 26, 1982, 57-47462

Int. Cl.³ G03G *9/08, 9/14*

U.S. Cl. 430—106.6 **7 Claims**

1. A magnetic toner having an improved humidity dependency, which comprises as main ingredients a magnetic material composed of magnetite and a binder medium, wherein the water-soluble component content in the magnetite is lower than 0.1% by weight and the water content of the magnetite at a temperature of 20° C. and a relative humidity of 60% is lower than 0.3% by weight.

4,495,268

ELECTROPHOTOGRAPHIC PROCESS USING TRANSFER-TYPE ONE-COMPONENT MAGNETIC DEVELOPER

Nobuhiro Miyakawa, Suita, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 217,579, Dec. 18, 1980,. This application Jun. 30, 1982, Ser. No. 393,802

Claims priority, application Japan, Dec. 25, 1979, 54-167594

Int. Cl.³ G03G *9/14*

U.S. Cl. 430—122 **7 Claims**

1. In an electrostatic photographic copying process comprising causing a p-type photosensitive plate carrying a positively charged latent image thereon to come in contact with a magnetic brush of a one-component dry magnetic developer to effect development of the electrostatic latent image and elec-

trostatically transferring the formed image of the developer onto a transfer sheet, the improvement wherein the magnetic developer consists essentially of particles having a particle size of from 5 to 35 microns and being obtained by kneading triiron tetroxide homogeneously and intimately with a binder medium, cooling the kneaded composition, pulverizing the cooled composition and classifying the pulverized composition, said binder medium comprising a polymer comprising at least one of vinyl aromatic monomer or acrylic monomer units and having a volume resistivity higher than 1×10^{15} ohm-cm and

particles of triiron tetroxide dispersed in the binder medium, said triiron tetroxide being one of an isometric system having a particle size of 0.25 to 1 micron and a coercive force of 30 to 80 Oe, said binder medium being present in an amount of 60 to 125 percent by weight based on the triiron tetroxide, said developer having a volume resistivity of at least 1.5×10^{14} ohm-cm, a dielectric constant of from 3.5 to 4.9 as measured under conditions of an electrode spacing of 0.65 mm, an electrode sectional area of 1.43 cm^2 and an inter-electrode load of 105 g/cm^2 and an electrostatic capacitance of from 7 to 9.5 pF as measured under said conditions.

4,495,269

WATERBORNE TWO COMPONENT DIAZO TYPE COATING COMPOSITION WITH HYDROLYZED POLYVINYL ACETATE AND HEXAMETHOXY METHYLMELAMINE RESIN

Edward C. Bialczak, Guilford, and John J. Chernovitz, East Haven, both of Conn., assignors to AM International, Inc., Chicago, Ill.

Continuation of Ser. No. 421,514, Sep. 22, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,706

Int. Cl.³ G03C *1/60, 5/34*

U.S. Cl. 430—150 **7 Claims**

1. An aqueous diazo light-sensitive composition which comprises water, a 30 to 50% hydrolyzed polyvinyl acetate resin, hexamethoxy methylmelamine resin, a diazo light-sensitive compound and at least one coupling agent for said diazo compound together with at least one acid stabilizer to enhance the shelf life of said composition said composition substantially excluding the presence of organic solvents.

3. A method of forming a diazo image which comprises applying an aqueous diazo light-sensitive film coating to the surface of a support substrate which substantially excludes the presence of organic solvents, said coating comprising a diazo light-sensitive compound, a 30 to 50% hydrolyzed polyvinyl acetate resin, hexamethoxy methylmelamine resin, a coupling agent and stabilizer for said diazo composition, drying said film, exposing said diazo composition selectively to ultraviolet radiation and developing said exposed diazo film to an alkaline vapor to produce a diazo image.

4,495,270

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT

Motohiko Tsubota, and Masakazu Moriguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 247,456, Mar. 25, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 444,912

Claims priority, application Japan, Mar. 25, 1980, 55-37846

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—218 **5 Claims**

1. A color diffusion transfer photographic element comprising

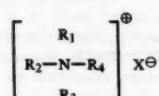
(a) a photosensitive element containing at least one photosensitive silver halide emulsion layer combined with a dye releasing redox compound,

(b) a dye image receiving element, and

(c) an alkaline processing composition element where the alkaline processing composition element contains

(1) a developing agent having a one-electron oxidation-reduction potential of -80 mV to -200 mV with respect to a saturated calomel electrode at a pH of 11.0, wherein said developing agent (1) is a 1-phenyl-3-pyrazolidone or an aminophenol, and

(2) at least one of the compounds represented by the following general formula (I) in an amount of about 10^{-6} to 1.0 g per kg of the alkaline processing composition:



(I)

where R_1, R_2, R_3 and R_4, which may be the same or different, each represents an alkyl group, a substituted alkyl group, an alkenyl group, an aryl group or a substituted aryl group, and $X^{\ominus}$ represents an anion, wherein said element is substantially free of dye salt formation between compounds of general formula (I) and the dye releasing redox compound.

4,495,271

RADIATION POLYMERIZABLE MIXTURE AND COPYING MATERIAL PRODUCED THEREFROM

Ulrich Geissler, Frankfurt am Main; Walter Herwig, Bad Soden, and Elisabeth Fetsch, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,865

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120052

Int. Cl.³ G03C *1/94, 1/70*

U.S. Cl. 430—277 **20 Claims**

1. A radiation-polymerizable mixture consisting essentially of

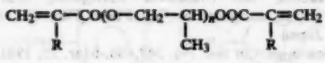
(a) from about 20 to about 80 weight percent of a binder which is insoluble in water, but soluble or at least swellable in aqueous alkaline solutions, and which consists essentially of a terpolymer consisting essentially of monomers selected from the group consisting of

(i) methacrylic acid,(ii) alkyl methacrylates having 4 to 15 carbons in the alkyl group or methyl methacrylate, and (iii) styrene or acrylonitrile;

(b) from about 0.1 to about 20 weight percent of a radiation-activatable polymerization initiator; and

(c) from about 20 to about 80 weight percent of a polymerizable acrylate or methacrylate of a dihydric to tetrahydric alcohol, said polymerizable acrylate or methacrylate comprising from 10 to about 100 weight percent, relative to the total amount of polymerizable compound, of a poly-

propylene glycol diacrylate or dimethacrylate corresponding to the formula



wherein

R represents a hydrogen atom or a methyl group and

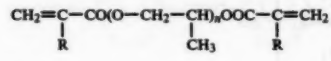
n represents a number from 2 to 13.

12. A copying material comprising a support and a radiation-polymerizable layer consisting essentially of:

(a) from about 20 to about 80 weight percent of a binder which is insoluble in water, but soluble or at least swellable in aqueous alkaline solutions, and which consists essentially of a terpolymer consisting essentially of monomers selected from the group consisting of (i) methacrylic acid, (ii) alkyl methacrylates having 4 to 15 carbons in the alkyl group or methyl methacrylate, and (iii) styrene or acrylonitrile;

(b) from about 0.1 to about 20 weight percent of a radiation-activatable polymerization initiator; and

(c) from about 20 to about 80 weight percent of a polymerizable acrylate or methacrylate of a dihydric to tetrahydric alcohol, said polymerizable acrylate or methacrylate comprising from 10 to 100 weight percent, relative to the total amount of polymerizable compound, of a polypropylene glycol diacrylate or dimethacrylate corresponding to the formula



wherein

R represents a hydrogen atom or methyl group and

n represents a number from 2 to 13.

14. A copying material according to claim 12 wherein said support is selected from the group consisting of copper, steel, chromium-plated copper, chromium-plated steel, zinc, nickel, aluminum, aluminum alloys, silicon dioxide, doped oxide layers, polyethylene terephthalate films, cellulose acetate films, nylon gauze and nickel screens.

4,495,272

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano; Mitsunori Hirano, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa,

Filed Jul. 12, 1983, Ser. No. 513,181

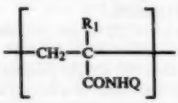
Claims priority, application Japan, Jul. 12, 1982, 57-120857

Int. Cl.³ G03C *7/16*

U.S. Cl. 430—381 **23 Claims**

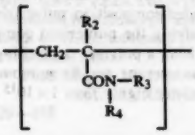
1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a cyan color image forming polymer coupler latex capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent wherein the cyan color image forming polymer coupler latex contains at least one repeating unit represented by the general formula (I) described below and at least one repeating unit represented by the general formula (II) described below:

(I)



wherein R_1 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and Q represents a cyan coupler residue capable of forming a dye upon coupling with an oxidized aromatic primary amine developing agent,

(II)



wherein R_2 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an unsubstituted or substituted alkyl group which may be a straight chain, a branched chain or a cyclic, or an unsubstituted or substituted phenyl group, wherein the repeating unit represented by the general formula (II) is derived from an ethylenically unsaturated monomer which does not have an ability of oxidative coupling with an aromatic primary amine developing agent; and

wherein the polymer further contains a repeating unit derived from a non-color forming monomer which does not couple with the oxidation product of an aromatic primary amine developing agent other than the repeating unit represented by the general formula (II).

4,495,273

COLOR PHOTOGRAPHIC ELEMENTS WITH IMPROVED MECHANICAL PROPERTIES

Mario Pannocchia, Ferrania, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 3, 1981, Ser. No. 298,942

Claims priority, application Italy, Sep. 17, 1980, 49692 A/80

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—510 **14 Claims**

1. A silver halide photographic element comprising a support on which there is spread a plurality of silver halide photosensitive layers containing color photographic couplers, these layers being associated with auxiliary gelatin layers, and said element further comprising, spread over said support under said plurality of photosensitive layers, a layer of gelatin in which there is dispersed an effective amount of droplets of a water-immiscible high boiling organic solvent which reduces adhesion between the support and the photosensitive layers, and an effective amount of a vinyl addition polymer latex.

4,495,274

DIRECT-POSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kazuhiro Yoshida, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,216

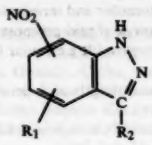
Claims priority, application Japan, Apr. 26, 1982, 57-68785

Int. Cl.³ G03C *1/36*

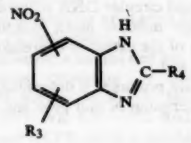
U.S. Cl. 430—523 **20 Claims**

1. A direct-positive silver halide photographic material, whose speed is stable and whose minimum density is small under a high temperature and a high humidity, said material comprising a support, a silver halide emulsion layer comprising fogged silver halide particles prepared in the presence of a water soluble iridium salt or a water soluble rhodium salt, and a hydrophilic colloidal layer comprising a compound selected from the group consisting of compounds having the following Formula I and II and at least one compound selected from the group consisting of a compound having the following Formula III and a gold compound,

Formula I



wherein R_1 is hydrogen, an alkyl, $—SO_3M$ or —COOM radical wherein M is hydrogen, an alkaline metal or ammonium ion, and R_2 is hydrogen or a lower alkyl radical, Formula II



wherein R_3 is hydrogen, an alkyl, $—SO_3M$ or —COOM radical wherein M is hydrogen, an alkaline metal or ammonium ion, and R_4 is hydrogen, an alkyl or $—CH_2—S—(CH_2)_n—Y'$ radical wherein n is an integer of from 1 to 3, and Y' is hydrogen or $—SO_3M$ radical, Formula III

$$H_2N—Y—NH—Y_mNH_2$$

is an integer of from 1 to 5, and Y is an alkylene radical having from 2 to 4 carbon atoms, provided not less than 2 Ys present inside the same molecule are allowed to be different alkylene radicals, wherein the adding quantity of the compound having Formula III is from 1.0×10^{-7} to 1.0×10^{-2} mole per mole of silver halide and the adding quantity of the gold compound in from 1.0×10^{-7} to 1.0×10^{-4} mole per mole of silver halide.

4,495,275

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shigeki Yokoyama, and Kunihiko Ohga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1981, Ser. No. 277,370

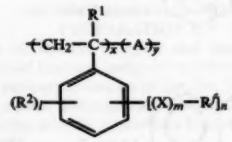
Claims priority, application Japan, Jun. 25, 1980, 55-86201; Apr. 28, 1981, 56-64702

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ G03C 1/78

U.S. Cl. 430—527 **5 Claims**

1. A silver halide photographic element, comprising: a support; a plurality of photographic layers on the support including at least one silver halide emulsion layer, wherein one of said layers comprises a water-soluble polymer having a recurring unit represented by following general formula (I)



(I)

wherein A represents a monomer unit formed by copolymerizing a copolymerizable monomer having at least one ethylenically unsaturated group; R^1 represents hydrogen, a halogen atom, or an alkyl group having 1 to 3 carbon atoms; R^2 can represent a monovalent substituent, and when l is more than one, two R^2 groups together can represent an atomic group forming a ring; R represents an alkyl group having 1 to 30 carbon atoms, an aralkyl group, an aryl group, or an alkylaryl group, wherein at least four hydrogens have been substituted for by fluorine atoms; X represents a divalent coupling group shown by $—(R)_p—L—$ (wherein R represents an alkylene group, an arylene group, or an aralkylene group; L represents an oxy group, a thioxy group, an imino group, a carbonyl group, a carboxy group, a carbothioxy group, a carboxyamido group, an oxycarbonyl group, a carbamoyl group, a sulfone group, a sulfonamido group, an N-alkylsulfonamido group, a sulfamoyl group, a sulfoxy group, or a phosphate group; and p is 0 or 1); l is an integer of 0 to 4; m is an integer of 0 to 3; n is an integer of 1 to 5; x is 0.1 to 50 mol%; and y is 50 to to 99.9 mol%, said water-soluble polymer being present in an amount sufficient to increase antistatic properties and provide good adhesion resistance.

4,495,276

PHOTOSENSITIVE MATERIALS HAVING IMPROVED ANTISTATIC PROPERTY

Masaaki Takimoto; Takashi Saida, and Masataka Murata, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 13, 1981, Ser. No. 253,499

Claims priority, application Japan, Apr. 11, 1980, 55-47663

Int. Cl.³ G03C 1/78

U.S. Cl. 430—527 **14 Claims**

1. A silver halide photosensitive element having an improved antistatic property comprising a silver halide layer, a base support and

an electrically conductive layer on said base support, said electrically conductive layer comprising fine particles of a crystalline metal oxide selected from the group consisting of ZnO, TiO_2, SnO_2, Al_2O_3, ZrO_3, In_2O_3, SiO_2, MgO, BaO and MoO_3 or a composite oxide thereof dispersed in an organic film-forming binder, said electrically conductive layer being formed by dispersing said fine particles of a crystalline metal oxide in said binder and coating the same, the light-scattering efficiency of said photosensitive material being 50% or less, wherein said electrically conductive layer has a surface resistivity of $10^{11}\Omega$ or less at 25° C. under 25% relative humidity.

4,495,277

PHOTOGRAPHIC SILVER HALIDE EMULSION

Manfred Becker, Leverkusen; Sieghart Klötzer, and Erik Moisar, both of Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellscaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 519,150

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229999

Int. Cl.³ G03C 1/02

U.S. Cl. 430—567 **10 Claims**

1. A photographic silver halide emulsion containing silver halide grains which have a core/shell structure and which are chemically sensitised at the surface thereof to provide density and speed, wherein, in the silver halide grains, at least one layer contains at least 25 mole percent of silver chloride and wherein the total content of silver chloride amounts to less than 30 mole percent and wherein the emulsion is chemically ripened at its surface to such an extent that the ratio R of the density D_r obtainable after surface ripening to the density D_u obtainable with the as yet non-surface-ripened, but otherwise identical, emulsion amounts to at least 3, the ratio R being determined by applying the ripened emulsion and the unripened emulsion to a layer support in exactly the same way, exposing them and then developing them for 17 minutes at 20° C. in a developer of the following composition:

ascorbic acid	10 g
p-methylaminophenol	2.4 g
Na_2CO_3 (sicc.)	10 g
KBr	2.0 g
water to 1000 ml	

and D_r being the value of 90% of the maximum density and D_u being obtained by exposure of the as yet unripened emulsion to the extent which leads to the density D_r in the case of ripened emulsion.

4,495,278

PROCESS FOR MAKING NOVEL BLOOD CLOTTING ENZYME COMPOSITIONS

William R. Thomas, Laguna Niguel, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 27, 1981, Ser. No. 258,072

Int. Cl.[3] **C12Q** *1/70, 1/56;* **C12N** *7/04, 7/06, 9/48, 9/68, 9/74*

U.S. Cl. 435—5 **87 Claims**

1. A method for inactivating virus in a blood clotting enzyme composition suspected to contain such virus, which method for inactivating consists essentially of heating the composition in the dry state until the composition is substantially free of said virus in the infectious form and said blood clotting enzyme in the denatured form.

4,495,279

ISOELECTRIC FOCUSSING-POLYNUCLEOTIDE/POLYACRYLAMIDE GEL ELECTROPHORESIS

Timothy P. Karpetsky, Riderwood, and Glenn E. Brown, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 27, 1982, Ser. No. 402,352

Int. Cl.[3] **C12Q** *1/68, 1/00, 1/34;* **C12N** *9/14, 9/22;* **G01N** *33/50, 27/26*

U.S. Cl. 435—6 **12 Claims**

1. A method for resolving multiple native nuclease activities in a protein sample by two-dimensional gel electrophoresis comprising:

(a) separating the proteins by gel electrophoresis in the first dimension under non-denaturing conditions according to isoelectric point;

(b) separating the proteins from step (a) by gel electrophoresis in the second dimension under non-denaturing conditions according to size and mass-to-charge ratio under conditions which inhibit nuclease activity, and wherein a polynucleotide nuclease substrate is incorporated into the second-dimension gel;

(c) incubating the second-dimension gel under nuclease-activating conditions; and

(d) visualizing nuclease activities in the gel.

4,495,280

CLONED HIGH SIGNAL STRENGTH PROMOTERS

Hermann G. Bujard, Heidelberg, Fed. Rep. of Germany; Annie C. Y. Chang, Palo Alto, and Stanley N. Cohen, Portola Valley, both of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Filed May 20, 1981, Ser. No. 265,276

Int. Cl.[3] **C12Q** *1/68, 1/02;* **C12P** *21/00, 19/34;* **C12N** *15/00*

U.S. Cl. 435—6 **15 Claims**

1. A linear DNA sequence having proximal to one end a strong T5 phage promoter, proximal to the other end a strong transcriptional terminator balanced with said strong T5 promoter, and having intermediate said promoter and terminator at least one of (1) a marker for selection adjacent to said terminator or (2) a replication system foreign to T5, wherein the direction of said promoter is away from said terminator and said marker is expressed at a frequency of less than about one-fourth the frequency of a structural gene, when said structural gene is inserted between said promoter and terminator, so as to be under the transcriptional control of said promoter and to bridge said linear DNA sequence to provide a circular DNA sequence.

11. A method for determining the strength of a promoter which comprises:

inserting said promoter into a linear DNA sequence having in the downstream direction for expression proximal to one end; a gene allowing for detection of expression; a transcriptional terminator of known strength; a marker allowing for determination of expression; and a replication system recognized by a predetermined host; whereby a circular DNA sequence is obtained;

transforming said host with said circular DNA sequence;

growing said host in nutrient medium under conditions allowing for determination of the extent of expression of said gene and said marker; and

determining the strength of said promoter is determined by the relative degree of transcription of said gene and said marker.

4,495,281

TRICYCLIC ANTIDEPRESSANT DRUG IMMUNOGENS, ANTIBODIES, LABELED CONJUGATES, AND RELATED DERIVATIVES

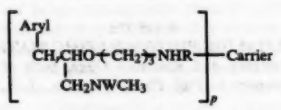
Robert T. Buckler, Edwardsburg, Mich., and Frederick E. Ward, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 21, 1982, Ser. No. 435,633

Int. Cl.[3] **A61K** *39/385;* **C07G** *7/00;* **C12N** *9/96;* **G01N** *33/54*

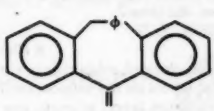
U.S. Cl. 435—7 **21 Claims**

1. A tricyclic antidepressant drug immunogen of the formula:



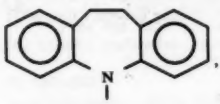
wherein Aryl represents a tricyclic antidepressant drug nucleus selected from the group consisting of

A.



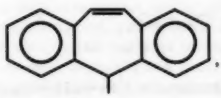
, r being 1, and ϕ being $-CH_2-$ or $-O-$;

B.



, r being 2; and

C.



, r being 2;

wherein W is hydrogen or methyl; R is a bond or a linking group; Carrier is an immunogenic carrier material; and p is on the average from 1 to about 50.

4,495,282

PROCESS FOR PRODUCING TARGET CELL LYSIS FACTOR AND USES THEREWITH

Haruo Ohnishi, Chiba, and Masakazu Mitsuhashi, Okayama, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama and Mochida Seiyaku Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 21, 1982, Ser. No. 400,487

Claims priority, application Japan, Jul. 21, 1981, 56-112913; Jul. 21, 1981, 56-112914; Jul. 31, 1981, 56-120459; Nov. 21, 1981, 56-187626; Nov. 21, 1981, 56-187627; Dec. 21, 1981, 56-205115

Int. Cl.³ C12P *21/00*; A61K *39/100*

U.S. Cl. 435—68 23 Claims

1. A process for producing human Target Cell Lysis Factor (TCLF), comprising:

implanting a human cell line selected from the group of cell lines consisting of BALL-1, TALL-1, NALL-1, Namalwa, MOLT-3, Mono-1, B-7101, JBL, EBV-Sa, EBV-Wa, EBV-HO, BALM 2, CCRF-CEM, DND-41, and CCFR-SB in a non-human warm-blooded animal;

feeding the animal to allow said human cell line to utilize the nutrient body fluid of the animal for its multiplication;

exposing the multiplied human cells to a TCLF inducer under conditions appropriate to induce the accumulation of a substantial amount of TCLF by said cells; and

recovering the accumulated TCLF.

4,495,283

PROCESS FOR PRODUCING L-HISTIDINE BY FERMENTATION

Kazumi Araki, Machida, and Tetsuro Kuga, Komae, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,892

Claims priority, application Japan, Apr. 10, 1982, 57-59869

Int. Cl.³ C12P *13/24*; C12N *15/00, 1/20*; C12R *1/13, 1/15*

U.S. Cl. 435—107 9 Claims

1. A process for producing L-histidine by fermentation which comprises culturing an L-histidine producing mutant microorganism belonging to the genus Corynebacterium or Brevibacterium in a nutrient medium until L-histidine is accumulated in the culture liquor and thereafter recovering said L-histidine therefrom; said mutant being characterized by at least a resistance to growth inhibition by an RNA polymerase inhibitor or a requirement for adenine.

4,495,284

MICROBIOLOGICAL PROCESS FOR THE PREPARATION OF 1-CARVONE

Peter M. Rhodes, Margate, and Norman Winskill, Ramsgate, both of England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 418,893, Sep. 16, 1982, abandoned. This application Nov. 22, 1982, Ser. No. 443,805

Claims priority, application United Kingdom, Oct. 21, 1981, 8131667

Int. Cl.³ C12P *7/26*; C12N *1/20*; C12R *1/38*

U.S. Cl. 435—148 5 Claims

1. A process for the preparation of 1-carvone which comprises cultivating the carvone producing microoorganism Pseudomonas strain NCIB no. 11671 in an aqueous nutrient medium in the presence of 1-α-pinene or 1-β-pinene and recovering 1-carvone from the fermentation medium.

4,495,285

PLASMINOGEN ACTIVATOR DERIVATIVES

Kimihiro Shimizu, Yoshikawa-danchi 4-16-102, Yoshikawa-machi, Kitakatsushika-gun, Saitama-ken; Tsuguji Nakahara, 6-21-6, Megurohonmachi, Meguro-ku, Tokyo, and Taketoshi Kinoshita, Satsuki-so, Noborito 15-30, Koshigaya-shi, Saitama-ken, all of Japan

Filed Oct. 27, 1982, Ser. No. 437,009

Claims priority, application Japan, Oct. 30, 1981, 56-172908

Int. Cl.³ C12N *9/72, 9/48, 11/06*

U.S. Cl. 435—215 17 Claims

1. A derivative of a human-originated non-immunogenic plasminogen activator, comprising at least one polyalkylene glycol chemically bonded with at least one coupling agent to amino acid side chains of said plasminogen activator, wherein said polyalkylene glycol has a molecular weight in the range of 200–20,000 and is unsubstituted or is substituted with one or more alkyl or one or more alkanoyl groups.

4,495,286

ANTIBIOTIC COMPLEX PRODUCING BACTERIAL CULTURE

Josefino B. Tunac, Troy, Mich.; William E. Dobson, Windsor, Canada, and Blanche D. Graham, Redford Township, Wayne County, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 25, 1983, Ser. No. 497,875

Int. Cl.³ C12N *1/20*; C12R *1/465*

U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of the microorganism *Streptomyces pulveraceus* subspecies *fostreus* ATCC 31906, said culture being capable of producing the CL 1565 antibiotic complex in a recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of nitrogen and carbon.

4,495,287

PROCESS FOR PRODUCING GENE PRODUCTS OF PLASMID HAVING TEMPERATURE DEPENDENT PLASMID COPY NUMBER

Bernt E. Uhlin; Kurt Nordström, and Soeren Molin, all of Odense, Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Filed May 22, 1978, Ser. No. 908,108

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759053

Int. Cl.³ C12N *9/86, 15/00, 1/00*; C12P *21/00*

U.S. Cl. 435—231 10 Claims

1. A method for producing a gene product of DNA, comprising cultivating bacteria carrying a recombinant DNA plasmid showing a controlled constant plasmid copy number when the host bacteria are cultivated at one temperature, and showing, when the host bacteria carrying the plasmid are grown at a different temperature, an altered plasmid copy number control allowing an at least 20 times higher copy number, or a totally uncontrolled copy number under conditions including at least a period of cultivation at or approaching a temperature at which the plasmid shows an altered copy number control allowing an at least 20 times higher or totally uncontrolled copy number; said approaching temperature being a temperature at which the host bacteria survive and are still capable of propagation; and harvesting, from the bacterial culture, a gene product of the plasmid.

4,495,288

METHOD OF CULTURING ANCHORAGE DEPENDENT CELLS

Allan P. Jarvis, Jr., Newburyport, Mass., and Franklin Lim, Richmond, Va., assignors to Damon Biotech, Inc., Needham Heights, Mass.

Continuation of Ser. No. 243,586, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 24,600, Mar. 28, 1979, Pat. No. 4,352,883, which is a continuation-in-part of Ser. No. 935,413, Oct. 28, 1978, abandoned. This application Apr. 13, 1983, Ser. No. 484,627

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.[3] **C12N** *5/00, 5/02, 11/00, 11/04*

U.S. Cl. 435—241 **10 Claims**

1. A process for culturing anchorage dependent cells, said process comprising the steps of:

A. suspending a cell in a medium containing an anchorage substrate material and high molecular weight components needed to maintain viability and to support mitosis of said cell;

B. encapsulating said cell together with said medium and anchorage substrate material within a semipermeable membrane comprising a polysaccharide having plural anionic groups cross-linked with a polymer having plural cationic groups and a molecular weight greater than 3,000, said semipermeable membrane having an upper limit of permeability sufficient to preclude traverse of said anchorage substrate material and sufficient to allow low molecular weight molecules to traverse said membrane;

C. suspending the product of step B in a culture medium sufficient to maintain viability and to support mitosis of said encapsulated cell; and

D. allowing said cell to undergo mitosis within said membrane.

4,495,289

TISSUE CULTURE CLUSTER DISH

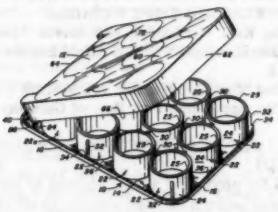
George F. Lyman, Rocky Point, Me., and Alan Lowry, Canton, Mass., assignors to Data Packaging Corporation, Cambridge, Mass.

Continuation of Ser. No. 244,731, Mar. 17, 1981, Pat. No. 4,349,632. This application Jun. 28, 1982, Ser. No. 393,174

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.[3] **C12M** *3/00, 1/22, 1/18;* **B01L** *3/00*

U.S. Cl. 435—284 **7 Claims**



1. A laboratory cluster dish comprising:

a base having a plurality of wells joined in a unitary structure for receiving materials,

a cover having a top closure wall, said cover being adapted to be supported in a first closed position with the closure wall adjacent the top edges of the wells,

and support means formed as part of the base for engaging the cover for supporting the cover on the base in a second position wherein the cover is lifted at an angle with respect to the base to permit access to the wells by a pipette or other instrument while preventing contamination of the wells by airborne substances.

5. A laboratory cluster dish comprising:

a base having a plurality of wells joined in a unitary structure for receiving materials, said base having a solid and continuous bottom wall which defines the bottoms of all the wells, said wells having side walls that extend upwardly from said bottom wall,

a rim formed on the periphery of the base and extending upwardly above the upper surface of the bottom wall to retain any fluid on the base which may spill from the wells, said rim being substantially shorter than the side walls of the wells so as to permit direct viewing of the side walls of the wells without looking through the rim,

a cover having a top closure wall adapted to be supported on the base to cover the wells,

and a bead formed on the bottom wall of the base and extending downwardly from the lower surface of the base to support the base on a surface with the bottoms of the wells off said surface.

4,495,290

APPARATUS FOR COMPOSTING

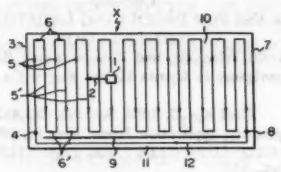
Kanichi Ito; Yoshio Hirayama; Ryoichi Takeuchi, all of Kanagawa; Masanori Kodaira, Tokyo, and Gorou Iizuka, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 254,278, Apr. 15, 1981, abandoned, which is a division of Ser. No. 150,652, May 16, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,216

Claims priority, application Japan, May 26, 1979, 54-65249; Jul. 11, 1979, 54-87576

Int. Cl.[3] **C12M** *1/06*

U.S. Cl. 435—315 **8 Claims**



1. An apparatus for use in achieving composting of organic materials, said apparatus comprising:

means defining a generally rectangular zone including first and second spaced parallel side edges, first and second spaced parallel end edges and a floor extending between said edges for being covered by and supporting a layer of organic materials provided with proper temperature, moisture and microorganism content to enable composting thereof, said floor having therein plural perforations;

means for injecting air through said perforations upwardly into the layer;

agitator means for agitating said organic materials being composted, said agitator means including a rotatable horizontal shaft which is mounted to extend transverse only to said side edges and a plurality of scraper blades which are fixed to said shaft and which extend generally radially from said shaft, said scraper blades being located such that they will scrape a predetermined width of organic materials from a layer of said materials covering said floor at said zone, such scraping being in a first direction parallel to said side edges, and such scraper blades being structured such that they will throw the thus scraped materials upwardly above said layer in a second direction opposite to said first direction, such that the thus thrown materials fall back down to reform the layer in a loose and non-packed manner, thereby aerating said materials to facilitate said composting thereof;

means defining a path outside of said zone and extending parallel to said side edges for allowing the passage of said

agitator means outwardly of said zone in a direction parallel to said side edges;

a longitudinal carriage extending transversely to said side edges and above said layer, said carriage extending from one said side edge to a position beyond the other said side edge and said path;

a carrier mounted on said carriage and supporting said agitator means;

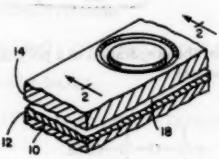
means for traversing said agitator means back and forth between said first and second side edges in directions transverse to said first and second directions, said traversing means comprising means for moving said carrier and said agitator means longitudinally of said carriage and for moving said carrier and said agitator means between said zone and said path when said carriage is located at either of said end edges; and

means for periodically shifting said agitator means in said first direction by incremental distances, equal to said predetermined width, from said first end edge to said second end edge, said shifting being between traversing movements of said agitator means, so that the entire said layer is scraped and thrown in incremental bands of said predetermined width, said shifting means comprising means for moving said carriage, said carrier and said agitator means parallel to said side edges and transverse to the longitudinal direction of said carriage.

4,495,291
INDICATORS FOR ETHYLENE OXIDE

William R. Lawton, Deerfield Beach, Fla., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,226
Int. Cl.³ G01N *21/78*
U.S. Cl. 436—1 **9 Claims**



9. The method for indicating the amount of residual alkylene oxide present in an alkylene oxide treated article by using a gas indicating device having a gas-sensitive cholesteric liquid crystal composition applied as a coating on a supporting substrate,

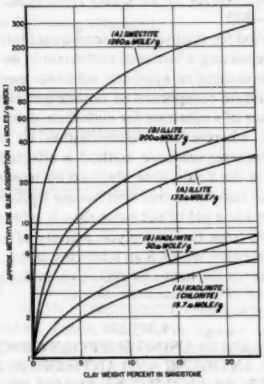
a mechanically isolated zone of said coating being sealed from direct exposure to an ambient system, and a transparent, gas-permeable cover sheet covering said isolated zone of said coating, and said zone being viewable through said cover sheet,

said method comprising the steps of exposing said indicating device to an alkylene oxide biocidal gas, diffusing a biocidal gas through said cover sheet to contact said zone of said coating, visually noting any color change occurring in said zone, aerating said indicating device, and again visually noting any color change in said zone of said coating and comparing the color of said zone with that of an area exposed directly to the ambient system, the steps of said method being carried out in the presence of an article whereby the gas indicating device and the article are simultaneously exposed to said steps.

4,495,292
DETERMINATION OF EXPANDABLE CLAY MINERALS AT WELL SITES

Robert M. Siebert, and Richard W. Lahann, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 16, 1982, Ser. No. 418,852
Int. Cl.³ G01N *31/06, 33/24*
U.S. Cl. 436—25 **5 Claims**



1. A method for determining the expandable clay content of subterranean formations comprising (1) sampling said formations, (2) adding a portion of said sample to a solution of organic dye in a non-polar or low polarity solvent, (3) adding a second portion of said sample to a solvent of organic dye in water or a polar solvent, and determining the expandable clay content as the difference between non-polar solvent adsorption and water or polar solvent adsorption.

4,495,293
FLUOROMETRIC ASSAY

Mark R. Shaffar, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 24, 1983, Ser. No. 469,323
Int. Cl.³ G01N *21/17, 21/25*
U.S. Cl. 436—172 **12 Claims**

7. An improved fluorimetric assay method for determining a ligand in an assay solution containing a sample suspected of containing the ligand, and an effective amount of a reagent system which in the presence of the ligand is capable of providing a change in the transmittive properties of the assay solution within a wavelength band, said improvement comprising adding to the assay solution an effective amount of a fluorescer wherein the fluorescer does not react either chemically or immunologically with the ligand or the reagent system, and wherein the excitation and/or emission wavelength band of the fluorescer overlaps the wavelength band associated with the change in the transmittive properties of the assay solution; irradiating the assay solution with light having a wavelength within the excitation wavelength band of the fluorescer; and then measuring the intensity of the fluorescer emitted by the assay solution as a measure of the concentration of the ligand in the sample.

4,495,294
METHOD FOR DETERMINING BACTERIAL ENDOTOXIN AND KIT THEREFOR

Chizuko Nakahara, Hino; Shigenori Tanaka, Tokyo; Hiroshi Tamura, Higashiyamato, and Akiyoshi Matsumoto, Hino, all of Japan, assignors to Seikagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,810
Claims priority, application Japan, Nov. 16, 1981, 56-182190
Int. Cl.³ G01N *33/16*; C12Q *1/00, 1/38, 1/36*
U.S. Cl. 436—502 **15 Claims**

1. In a method for qualitatively, semi-quantitatively or quantitatively determining a bacterial endotoxin in an assay sample by a gellation method or synthetic substrate method using an amoebocyte lysate component of horseshoe crab in the presence or absence of a substrate for endotoxin determination, the improvement wherein the determination by the gellation method or synthetic substrate method is effected by using an assay sample in the liquid state obtained by treating said assay sample with an endotoxin-free acid having a $pKa^{25°\,C.}$ value of not more than 3 at a pH of not more than 3, whereby the assay sample is freed from the hydrolytic activity of an endotoxin-independent enzyme, which is an inhibiting factor in measuring the true amount of the bacterial endotoxin in the assay sample.

4,495,295
IMMUNOASSAYS USING SUPPORT-CONTAINING SEPARATE ANTIGENS AND ANTIBODIES DERIVED FROM AN IMMUNE COMPLEX

A. Robert Neurath, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 41,127, May 21, 1979, and a continuation-in-part of Ser. No. 323,003, Nov. 19, 1981. This application Mar. 29, 1982, Ser. No. 362,718
Int. Cl.³ G01N *33/54, 33/60*
U.S. Cl. 436—518 **26 Claims**

13. A process for detecting the presence of an antigen in a specimen which comprises:

(a) contacting the specimen suspected of containing an antigen with a substrate having bound thereon a mixture of antigens and antibodies to said antigen in said specimen, said antibodies and said antigen being bound to said substrate separately not being in the form of an immune complex, in the presence of a radioactive material labeled or enzyme labeled antigen, incubating the so-contacted substrate and washing the substrate;

(b) effecting radioimmunoassay if said antigen is radioactive or enzyme labeled immunoassay if said antigen is enzyme labeled; and

(c) comparing the counts if radioimmunoassay is effected or enzymatic activity if enzyme immunoassay is effected with the counts or enzymatic activity of a control carried out without the presence of said specimen.

4,495,296
LABELED ANTI-HAPTEN ANTIBODIES AND THEIR USE AS A UNIVERSAL REAGENT FOR SOLID PHASE RADIO- AND/OR ENZYME-IMMUNOASSAYS

A. Robert Neurath, New York, and Nathan Strick, Far Rockaway, both of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed May 21, 1979, Ser. No. 41,127
Int. Cl.³ G01N *33/52, 33/54, 33/56*
U.S. Cl. 436—530 **3 Claims**

1. A process for detecting the presence of an antigen in a specimen which comprises:

(A) contacting said specimen with a substrate coated with antibodies of said antigen, incubating the so-contacted substrate and washing the substrate;

(B) contacting the washed material of step (A) with a hapten conjugated antibody against said antigen, incubating the so-contacted material and washing the so-incubated material;

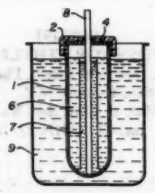
(C) contacting the washed material of step (B) with a radioactive material labeled or enzyme containing anti-hapten antibody prepared by contacting an anti-hapten antiserum with a haptenated antigen and recovering anti-hapten antibody from haptenated antigen and any other serum proteins, incubating the so-contacted material and washing the same; and

(D) effecting radioimmunoassay if said anti-hapten antibody is radioactive or enzyme labeled immunoassay if said antihapten antibody is enzyme labeled, wherein said anti-hapten antibody is one prepared by contacting an anti-hapten anti-serum with a hapten containing protein, dissolving the resultant complex in a buffer which dissociates an antigen-antibody complex and separating said anti-hapten antibody from haptenated antigen.

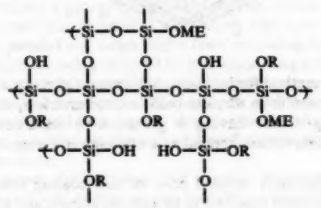
4,495,297
METHOD FOR MAKING A GRADIENT DOPED POLYSILOXANE GEL

Ramón Puyané, Petit-Lancy; Carlos J. R. Gonzalez-Oliver, Geneva, and Alan L. Harmer, Plan les Ouates, all of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jun. 24, 1983, Ser. No. 507,829
Claims priority, application European Pat. Off., Jul. 26, 1982, 82810317.6
Int. Cl.³ C03C *3/04*
U.S. Cl. 501—12 **7 Claims**



1. A method for the preparation of a polysiloxane doped gel of following structure



in which ME is at least one dopant (metals) metal and R is alkyl, consisting essentially of the following steps:

(1) making an organic solution of silicon alkoxide and adding water for progressively hydrolyzing part of said alkoxide into the corresponding hydroxy functions with consecutive polycondensation by dehydration of said hydroxy functions to a cross-linked polysiloxane backboned wet gel body, and

(2) thereafter placing said wet gel body as a first phase into surface contact with a body of a waterless nongelling organic solution of silicon alkoxide as a second phase, one of said phases containing at least one dopant metal alkoxide and letting the metals including silicon in still free

unpolymerized form migrate by diffusion from one phase to the other, the direction of migration being from the phase richer in each metal to the phase leaner in the metal of the two phases to produce a smooth gradient profile across the doped gel of said dopant metal and (3) thereafter removing the doped gel body from the solution.

4,495,298

THALLIUM-CONTAINING OPTICAL GLASS

Takasi Yamagishi, Itami, and Yukio Noguchi, Toyonaka, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed May 11, 1982, Ser. No. 377,246
Claims priority, application Japan, May 12, 1981, 56/71122
Int. Cl.³ C03C *3/04, 3/08, 3/10, 3/30*
U.S. Cl. 501—55 **10 Claims**

1. A lens having a refractive index gradient, made of a thallium-containing optical glass composition which consists essentially of the following oxides in the indicated proportions in mole %

SiO_2	35–80
Tl_2O	1–30
$Tl_2O + R_2O$ (R being an alkali metal)	1–35
ZnO	0–35
GeO_2	0–30
BaO	0–25
TiO_2	0–20
MgO	0–20
B_2O_3	0–8
ZrO_2	0–2
Al_2O_3	0–8
SnO	0–5
CaO	0–10
SrO	0–10
PbO	0–10
La_2O_3	0–5
Bi_2O_3	0–8
Ta_2O_5	0–2

and satisfies the following relations

$$5 \leqq ZnO + GeO_2 + BaO + TiO_2 + MgO + B_2O_3 \leqq 40,$$

$$0.1 \leqq ZrO_2 + Al_2O_3 + SnO \leqq 8,$$

$$0 \leqq CaO + SrO + PbO + La_2O_3 + Bi_2O_3 + Ta_2O_5 \leqq 10,$$

and

$$0 \leqq Li_2O \leqq 7,$$

said lens having an aperture angle (θc) on its optical axis of not less than 19 degrees.

4,495,299

THALLIUM-CONTAINING OPTICAL GLASS COMPOSITION

Yukio Noguchi, Toyonaka, and Takashi Yamagishi, Itami, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,874
Claims priority, application Japan, Sep. 14, 1982, 57-160212
Int. Cl.³ C03C *3/04, 3/08, 3/10, 3/30*
U.S. Cl. 501—72 **12 Claims**

1. A thallium-containing optical glass composition which consists essentially of the following oxides in the indicated proportions in mole %:

SiO_2	35–80
Tl_2O	4–26
$Tl_2O + R_2O$ (in which R is an alkali metal)	8–42
ZnO	6–26
ZrO_2	0–2
Al_2O_3	0–8
SnO and/or SnO_2	0–5
B_2O_3	0–8

and satisfies the following relations:

$$0 \leqq K_2O \leqq 10$$

$$4 \leqq Na_2O + Li_2O \leqq 26$$

$$0.1 \leqq ZrO_2 + Al_2O_3 + SnO \text{ and/or } SnO_2 \leqq 8$$

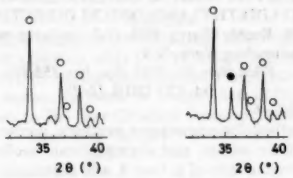
$$0.18 \leqq \frac{Na_2O + Li_2O}{Tl_2O} \leqq 5.50.$$

4,495,300

METHOD FOR MANUFACTURE OF LOW THERMAL EXPANSION CORDIERITE CERAMICS

Shiro Sano, Nagoya, Japan, assignor to Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Tokyo, Japan

Continuation of Ser. No. 431,560, Sep. 30, 1982, abandoned. This application May 14, 1984, Ser. No. 609,526
Claims priority, application Japan, Jan. 14, 1982, 57-4155
Int. Cl.³ C04B *35/18, 35/20, 35/48*
U.S. Cl. 501—102 **3 Claims**



1. A method for the manufacture of a low thermal expansion cordierite ceramic having an excellent dielectric property, which consists of preparing at least one zirconium compound selected from the group consisting of zirconium chloride, zirconium oxychloride, zirconium oxide, zirconium bromide, zirconium hydroxide and zirconium fluoride; and at least one phosphorus compound selected from the group consisting of phosphorus oxide, phosphorus bromide, phosphorus fluoride and phosphoric acid; in relative amounts representing a weight ratio of 1:1 to 5:1 as zirconia to phosphorus pentoxide; adding said zirconium compound and said phosphorus compound in said weight ratio to cordierite, which consists of 5 to 17% by weight of MgO, 30 to 45% by weight of Al_2O_3 and 43 to 60% by weight of SiO_2, in a combined amount of 2 to 25% by weight as the respective oxides, based on the amount of cordierite; and firing the resultant mixture at a temperature of 1200° C. to 1450° C., thereby giving rise to zircon in the sintered product.

4,495,301

INSULATING REFRACTORIES

Peter T. Sutor, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 6, 1983, Ser. No. 482,648
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—124 **3 Claims**

1. A lightweight refractory monolith forming high alumina

sized graded batch comprising about 15 to 40%, by weight, of at least one material selected from the group consisting of hydrated alumina and activated alumina, the remainder being high alumina refractory material having an alumina content of at least about 50% and calcium aluminate cement, said high alumina refractory material including at least 25%, by weight of the batch, of hollow spherical particles of alumina, the cement constituting at least about 15%, by weight of the batch.

4,495,302

CERAMICS COMPACT

Derek Taylor, Congleton; Stephen P. Howlett, Macclesfield; Howard J. Farr, Gnosall, and Barbara L. Tickle, Stone, all of England, assignors to Doulton Industrial Products Limited, Staffordshire, England

Filed Jul. 26, 1983, Ser. No. 517,400

Claims priority, application United Kingdom, Jul. 28, 1982, 8221855

Int. Cl.³ C04B *35/44*

U.S. Cl. 501—125 **13 Claims**

1. A fired ceramics compact suitable for use in casting of a superalloy material wherein the ceramics compact consists essentially of a ceramics material consisting of a solid solution of BaO and Al_2O_3 wherein the composition of the solid solution lies on or between a first and a second eutectic composition, the first and the second eutectic compositions being adjacent and occurring to either respective side of stoichometric $BaO.Al_2O_3$ in a phase diagram of the solid solution.

4,495,303

PROCESS FOR MAKING ZEOLITE ZSM-45 WITH A DIMETHYLDIETHYLAMMONIUM DIRECTING AGENT

Guenter H. Kuehl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 555,911

Int. Cl.³ C01B *33/28*

U.S. Cl. 502—62 **6 Claims**

1. A method for preparing a synthetic porous crystalline aluminosilicate zeolite, said aluminosilicate zeolite having a silica to alumina ratio of at least 8, said aluminosilicate zeolite as calcined further being characterized by an X-ray diffraction pattern exhibiting values substantially as set forth in Table 1 of the specification, said method comprising preparing a mixture capable of forming said aluminosilicate zeolite, said mixture containing sources of alkali metal ions, an oxide of aluminum, an oxide of silicon, a dimethyldiethylammonium ion and water and having a composition in terms of moles of oxides, falling within the following ranges:

SiO_2/Al_2O_3	10–80
H_2O/OH^-	15–100
OH^-/SiO_2	0.40–0.80
DMDEA/(DMDEA + Z)	0.75–1.0

wherein DMDEA represents said dimethyldiethylammonium ion and Z represents said alkali metal ion, and maintaining said mixture under sufficient conditions until said crystalline aluminosilicate zeolite is formed.

5. A synthetic porous crystalline aluminosilicate zeolite having a composition, on an anhydrous basis and in terms of moles of oxides per mole of alumina, expressed by the formula:

$$(0.8-1.8)R_2O:(0.0-0.3)Na_2O:(0.0-0.5)K_2O:Al_2O_3:xSiO_2$$

wherein R_2O is the oxide of dimethyldiethylammonium ions and x is at least 8, said aluminosilicate zeolite as calcined being characterized by an X-ray diffraction pattern exhibiting values substantially as set forth in Table 1 of the specification.

4,495,304

CATALYST FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 301,678, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,315, Jul. 29, 1980, abandoned. This application May 16, 1983, Ser. No. 494,604

Int. Cl.³ B01J *29/06, 21/00*

U.S. Cl. 502—66 **48 Claims**

1. A composition of matter comprising, in intimate admixture, a major amount of solid particles capable of promoting hydrocarbon conversion at hydrocarbon conversion conditions, said solid particles including at least one crystalline aluminosilicate capable of promoting said hydrocarbon conversion, and a minor amount of discrete entities having a composition different from said solid particles and comprising at least one metal-containing spinel which includes a first metal and a second metal having a valence higher than the valence of said first metal, the atomic ratio of said first metal to said second metal in said spinel being at least about 0.2 and said spinel having a surface area in the range of about 25 $m^2/gm.$ to about 600 $m^2/gm.$

2. The composition of claim 1 wherein said hydrocarbon conversion comprises hydrocarbon cracking in the substantial absence of added molecular hydrogen and a major amount, by weight of said solid particles have diameters in the range of about 10 microns to about 250 microns.

4. The composition of claim 2 wherein at least one of said solid particles and discrete entities further comprise a minor, catalytically effective amount of at least one additional metal component capable of promoting the conversion of sulfur dioxide to sulfur trioxide.

6. The composition of claim 1 wherein said spinel comprises alkaline earth metal-containing spinel and the atomic ratio of said first metal to second metal is at least about 0.25.

9. The composition of claim 6 wherein said spinel includes magnesium and aluminum, and the atomic ratio of magnesium to aluminum in said spinel is in the range of about 0.25 to about 0.75.

4,495,305

CATALYST FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 301,676, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,320, Jul. 29, 1980, abandoned. This application May 16, 1983, Ser. No. 494,603

Int. Cl.³ B01J *29/06, 21/00*

U.S. Cl. 502—65 **62 Claims**

1. A composition of matter comprising, in intimate admixture, a major amount of solid particles capable of promoting hydrocarbon conversion at hydrocarbon conversion conditions, said solid particles including at least one crystalline aluminosilicate capable of promoting said hydrocarbon conversion, and a minor amount of discrete entities having a composition different from said solid particles and comprising at least one metal-containing spinel including alkaline earth metal and a second metal having a valence higher than the valence of said alkaline earth metal, the aromatic ratio of said alkaline earth metal to said second metal in said spinel being at least about 0.25 and said spinel having a surface area in the range of about 25 $m^2/gm.$ to about 600 $m^2/gm.$, and at least one rare earth metal component associated with said spinel.

46. A composition of matter comprising a major amount of at least one alkaline-earth metal-containing spinel including an alkaline earth metal and a second metal having a valence higher than the valence of said alkaline earth metal, the atomic ratio of said alkaline earth metal to said second metal in said spinel being at least about 0.17, said spinel having a surface area in the range of about 25 $m.^2/gm.$ to about 600 $m.^2/gm.$, and a minor amount of at least one rare earth metal component associated with said spinel.

50. The composition of claim 46 wherein said alkaline earth metal is magnesium and said second metal is aluminum and the atomic ratio of said magnesium to said aluminum in said spinel is at least about 0.25.

4,495,306
PREPARATION OF CATALYSTS BY THE PRECIPITATION OF A HYDROXIDE OR SULFIDE FROM AN EMULSION IN THE PRESENCE OF CARBONACEOUS SOLID

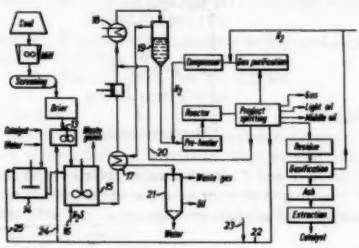
Peter Budahn, Ellerhoop, and Jörn Ehlers, Uetersen, both of Fed. Rep. of Germany, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 364,177, Apr. 1, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,884

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114168

Int. Cl.³ B01J *23/82, 23/74;* **C10G** *1/06, 47/12*

U.S. Cl. 502—185 **10 Claims**



1. A process for the preparation of a catalyst suitable for hydrogenation of coal and/or heavy oil fractions by bringing a water-in-oil emulsion containing a salt of hydrogenating metal into contact with a carbonaceous solid followed by removal of water characterized in that the salt is converted into a hydroxide or sulphide while the water-in-oil emulsion is in contact with the carbonaceous material.

5. A process according to claim 1 wherein the carbonaceous material is suspended in oil, the emulsion is mixed with the suspension, and the salt is then converted to the hydroxide or sulphide.

9. A process according to claim 1 wherein a compound of calcium is added before, during or after the impregnation of the carbonaceous material to give a calcium concentration of 0.1 to 0.5% by weight, based on the carbonaceous material.

4,495,307
SHAPED CATALYST PARTICLE FOR USE IN HYDROPROCESSING OF PETROLEUM OILS

Porter Clements, Whiting, Ind., assignor to Katalco Corporation, Oak Brook, Ill.

Filed Nov. 14, 1983, Ser. No. 551,063

Int. Cl.³ B01J *23/24, 23/74, 35/02*

U.S. Cl. 502—305 **5 Claims**

1. A catalyst particle comprising one or more hydrogenation metals selected from Group VIB and Group VIII of the Periodic Table of Elements and a porous, inorganic oxide substrate supporting said metal or metals, said particle having a generally cylindric configuration with a cross-section of trilobular shape having concave interlobular interstices bluntly rounded with greater curvature than the curvature of the lobes, wherein the trilobular shape is defined by an equilateral triangle, the midpoints of adjacent sides of the triangle serving as the centers for two lobe-defining radii of curvature (r_2), the vertices of the triangle defining the centers for the interstitial radii of curvature (r_1), and the common intersection of the bisectors of the included angles of the triangle serving as the center for the remaining lobe-defining radius of curvature (r_3).

4,495,308
TWO-REGION SPHERICAL CATALYSTS

Kirk R. Gibson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 471,985, Mar. 4, 1983, abandoned. This application Feb. 14, 1984, Ser. No. 579,847

Int. Cl.³ B01J *21/04*

U.S. Cl. 502—355 **12 Claims**

1. A catalyst for hydroprocessing hydrocarbonaceous feedstocks comprising:

an inner region of catalyst characterized by having less than 5% of the pore volume contributed by macropores and comprising between 5 and 30 weight percent total catalytic metals supported on a refractory inorganic oxide; and

an outer region of catalyst characterized by having more than 10% of the pore volume contributed by macropores and comprising between 1 and 15 weight percent total catalytic metals supported on a refractory inorganic oxide.

4,495,309
REACTION INJECTION MOLDED POLYURETHANES, POLYUREAS AND POLYUREA-URETHANES EMPLOYING THIAPOLYCYCLIC POLYISOCYANATES

Tonja R. Sutton, and David W. Hughes, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 15, 1984, Ser. No. 610,453

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—51 **14 Claims**

1. A reaction injection molding composition comprising a polyahl, a normally liquid thiapolycyclic polyisocyanate and a urethane catalyst, a urea catalyst or a mixture of a urethane catalyst and a urea catalyst in proportions such that, upon subjecting the composition to conditions of a reaction injection molding process, a useful article is formed.

4,495,310
METHOD OF FORMING A URETHANE PREPOLYMER AND ITS USE IN CONSOLIDATING AGGREGATE MATERIAL

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Chicago, Ill.

Continuation-in-part of Ser. No. 350,946, Feb. 22, 1982, Pat. No. 4,439,552, which is a continuation of Ser. No. 262,204, May 8, 1981, Pat. No. 4,329,436. This application May 10, 1983, Ser. No. 493,378

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—99 **9 Claims**

1. A method of forming a urethane prepolymer, said method comprising the steps of:

(a) adding to a polyether or polyester compound under substantially anhydrous conditions a stoichiometric excess of a compound containing at least two active isocyanate groups per molecule to initiate an exothermic condensa-

tion reaction between said polyether or polyester compound and said isocyanate compound, the temperature of said reactants being such that the temperature of the reactants after addition of isocyanate is less than or equal to about 120° C., the density of said isocyanate compound being greater than the density of said polyether or polyester compound and said isocyanate compound being added gradually to said polyether or polyester without substantial added mixing whereby a relatively dense isocyanate layer and a polyether or polyester layer overlying said isocyanate layer are formed; and,

(b) allowing said reaction to proceed in order to form said urethane prepolymer.

4,495,311

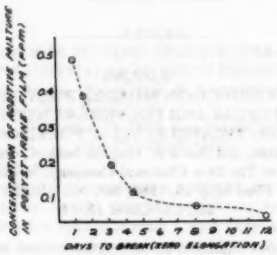
DEGRADABLE HYDROCARBON POLYMERS

Donald E. Hudgin, Princeton Junction, and Thomas Zawadzki, Princeton, both of N.J., assignors to Princeton Polymer Laboratories, Inc., Princeton, N.J.

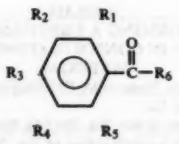
Division of Ser. No. 269,291, Jul. 6, 1972, Pat. No. 3,830,764. This application Mar. 27, 1974, Ser. No. 455,334

Int. Cl.³ C08F 8/06

U.S. Cl. 523—126 **43 Claims**



1. A composition comprising a first component selected from the group consisting of chelates of a metal which is titanium or zirconium with a beta diketone, and a second component selected from the group consisting of (a) a benzoyl compound of the formula:



and (b) acetonaphthone where R_1, R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, aryl, and aryloxy and R_6 is selected from the group consisting of alkyl, aralkyl, aryl, aroyl benzoylphenyl, and pyridyl groups and such groups substituted with a member of the group consisting of halogen, alkyl, aryl, alkoxy, and aryloxy, each of said components being present in an amount sufficient that the mixture thereof is more effective to decrease the time of degradation of a polymer of an olefin having having 2 to 3 carbon atoms than a corresponding amount of either member of the two component additive system by itself.

4,495,312

RESIN COMPOSITION SUITABLE FOR USE IN MEDICAL DEVICES

Hiroyoshi Hata, Shiga; Seiichirou Honda, Takarazuka; Seiya Hosokawa, Ibaraki; Kazuhiko Kanki, Uji; Toshiharu Matsumiya, and Kazuo Sakamoto, both of Shinnanyo, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1983, Ser. No. 474,349

Claims priority, application Japan, Mar. 16, 1982, 57-41889; Jun. 1, 1982, 57-94582; Oct. 18, 1982, 57-183501

Int. Cl.³ C08K 5/15

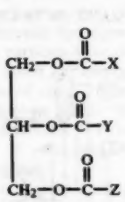
U.S. Cl. 523—105 **14 Claims**

1. A resin composition comprising the following blend:

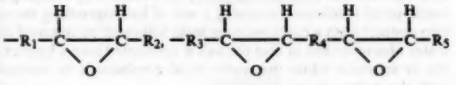
(a) a vinyl chloride/ethylene copolymer having an ethylene content in the range of 3 to 12% by weight, an average degree of polymerization in the range of 700 to 2900 and a ratio of weight average molecular weight to number average molecular weight in the range of from 2.5:1 to 5.5:1,

(b) an ethylene/carbon monoxide/vinyl acetate copolymer, and

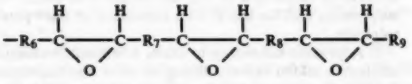
(c) a glycerin ester of the following formula



wherein X, Y and Z are identical or different and each represents a hydrogen atom or a residue of an epoxidized aliphatic carboxylic acid selected from the class consisting of



and



in which R_1, R_3, R_4, R_6, R_7 and R_8, independently from each other, represent a saturated or unsaturated, linear or branched divalent hydrocarbon group having 1 to 25 carbon atoms, and R_2, R_5 and R_9, independently from each other, represent a saturated or unsaturated, linear or branched monovalent hydrocarbon group having 1 to 25 carbon atoms,

provided that X, Y and Z are not hydrogen atoms at the same time;

said composition being such that before blending the ingredients of the resin composition, the ethylene/carbon monoxide/vinyl acetate copolymer is treated with a liquid which substantially dissolves acetic acid and in which the copolymer is substantially insoluble and the thus-treated copolymer is dried.

4,495,313

PREPARATION OF HYDROGEL FOR SOFT CONTACT LENS WITH WATER DISPLACEABLE BORIC ACID ESTER

Hans-Ole Larsen, Farum, Denmark, assignor to Mia Lens Production A/S, Copehagen, Denmark

Continuation-in-part of Ser. No. 259,115, Apr. 30, 1981, abandoned. This application Mar. 19, 1982, Ser. No. 360,107

Int. Cl.³ C08K 5/05; C08F 2/16; C08L 33/08

U.S. Cl. 523—106 13 Claims

1. A method of forming a hydrogel of improved mechanical and optical properties appropriate for use in a soft contact lens which comprises providing a substantially anhydrous polymerizable mixture of a polymerizable, hydrophilic hydroxy ester of acrylic or methacrylic acid and a polyhydric alcohol, and a water displaceable ester of boric acid and a polyhydroxyl compound having at least 3 hydroxyl groups or mixtures thereof, causing said mixtures to polymerize so as to form a hydrophilic polymer containing at least 30% by volume of said boric acid ester, and displacing said boric acid ester with water.

4,495,314

DENTURE ADHESIVE CREAMS WITH IMPROVED EXTRUDABILITY

James J. Keegan, Bloomfield, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 23, 1981, Ser. No. 323,508

Int. Cl.³ A61K 6/00

U.S. Cl. 523—120 35 Claims

1. In an improved denture adhesive composition comprising an adhesive component and a vehicle, wherein said vehicle comprises a gel consisting essentially of:

A. a mineral oil component;

B. a polyolefin wax component; the improvement wherein said vehicle comprises

sorbitan monostearate, in an amount of from about 0.25% to about 2.25% by weight of said gel wherein said denture adhesive exhibits improved extrudability.

4,495,315

PHOTO-DEGRADABLE STYRENE RESIN COMPOSITIONS

Hiroshi Miyoshi, Takatsuki; Hirohumi Mori, and Yoriko Tanoue, both of Suita, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

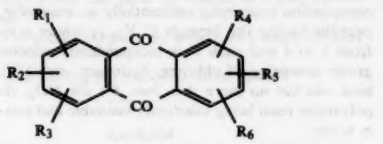
Division of Ser. No. 153,013, Jun. 14, 1971, abandoned. This application Sep. 9, 1974, Ser. No. 504,159

Claims priority, application Japan, Sep. 18, 1970, 45-82135; Sep. 19, 1970, 45-82381; Dec. 4, 1970, 45-107896; Dec. 28, 1970, 45-126948

Int. Cl.³ C08F 8/50

U.S. Cl. 523—125 18 Claims

1. A photo-degradable styrene resin composition which consists essentially of a polystyrene resin selected from one of the group consisting of a homopolymer of styrene and a copolymer of styrene with at most 50 mole percent of another comonomer copolymerizable therewith selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, acrylic acid, methacrylic acid, methyl methacrylate, acrylonitrile, butadiene, isoprene, maleic acid, maleic anhydride, maleic acid esters, itaconic acid and itaconic acid esters, and, incorporated therein, at least one photo-degradable agent selected from compounds of the following formula



wherein R_1, R_2, R_3, R_4, R_5, and R_6, which may be the same or different, represent a member selected from the group consisting of hydrogen, chlorine, bromine, hydroxyl, methyl, ethyl, methoxy, ethoxy and nitro; with the proviso that when at least one of R_1, R_2, R_3, R_4, R_5, or R_6 is a hydroxyl group, said hydroxyl group is not present in an ortho-position to a —CO— group;

said photo-degradable agent being present in an amount sufficient to exhibit a photo-degradable effect.

4,495,316

ACID-CURABLE FLUORIDE-CONTAINING NO-BAKE FOUNDRY RESINS

David R. Armbruster, Forest Park, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

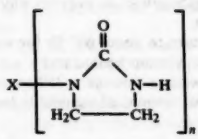
Filed Sep. 23, 1976, Ser. No. 726,032

Int. Cl.³ C08L 61/10; C08K 3/16

U.S. Cl. 523—139 25 Claims

1. An acid-curable resin binder solution consisting essentially of:

(a) a resinous material selected from the group consisting of phenolic resole resins, furan resins, resorcinol resins, phenolic resorcinol resins, ethylene urea-terminated resins characterized by the formula:



wherein X is an organic structure having a molecular weight of from about 100 to about 5000 and n is greater than one and mixtures thereof;

(b) a compound that generates fluoride during acid-curing of the prepolymer; and

(c) a hydrophilic solvent for said resinous material, said solvent being present in an amount sufficient to provide a viscosity in the range of from about 10 to about 1000 cps at 25° C.

4,495,317

WARER REDUCIBLE EPOXY COATING COMPOSITION

Richard A. Albers, Irvine, Calif., assignor to Deft Chemical Coatings, Inc., Irvine, Calif.

Continuation of Ser. No. 143,916, Apr. 25, 1980, Pat. No. 4,352,898. This application May 7, 1982, Ser. No. 375,996

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ C08J 3/08; C08L 63/00; C07D 3/58

U.S. Cl. 523—414 31 Claims

1. A homogeneous water-reducible coating composition comprising epoxy resin and sufficient modified polyamine resin to cure the epoxy resin, the modified polyamine resin being a polyamide-epoxy adduct formed by reacting a poly-amino-imidazoline and diglycidyl ether of bisphenol A, the modified polyamine resin being homogeneously reduced in an aqueous system comprising nitroparaffin in an amount of at least 2% by weight of the modified polyamine resin and water in an amount

of at least 50% by weight of the modified polyamine resin, the composition containing substantially no emulsifier, the nitroparaffin having the formula C_nX_{2n+2} where n is an integer from 1 to 4 and each X is independently selected from the group consisting of chlorine, hydrogen, and NO_2, where at least one but no more than two X's are NO_2, the modified polyamine resin being inherently insoluble and non-dispersible in water.

4,495,318

LOW TACK MICROSPHERE GLUE

Philip H. Howard, Jamesville, N.Y., assignor to International Cube Corporation, Syracuse, N.Y.

Filed Mar. 21, 1984, Ser. No. 591,948

Int. Cl.³ C08F *2/30, 265/02;* C08L *51/00*

U.S. Cl. 524—375 **1 Claim**

1. A low tack microsphere glue for application to a substrate to provide a reusable adhesive surface having microspheres surrounded by hydrated layers of surfactant which act as a steric barrier to particle coalescence prepared according to the process comprising the steps of:

admixing, in approximate parts by weight, 2820 parts water; 54 parts of a 15% aqueous solution of polyacrylic acid having a molecular weight of 300,000 to 500,000 until said acid is dissolved;

raising the pH of the solution to 7.0 by adding concentrated ammonium hydroxide thereto;

adding 3.7 parts of a 70% active benzoyl peroxide catalyst and 1000 parts 2-ethylhexyl acrylate to the solution;

holding said mixture under a vacuum of about 25 inches of mercury with stirring for about 5 minutes;

adding, under a nitrogen purge, about 21.5 parts of a nonionic surfactant selected from the group consisting of octylphenol ethoxylate or polyoxyethylene oleyl ether with agitation;

heating the mixture to about 60° C. for about 16 hours to form an aqueous compression; and

passing the suspension through a 250 micron screen to remove the small amount of unsuitable larger particle agglomerates.

4,495,319

WATER BASED CONCRETE CURE

John J. Sackis, Bartlett, and Paul H. Anderson, Elgin, both of Ill., assignors to W. R. Meadows, Inc., Chicago, Ill.

Division of Ser. No. 421,851, Sep. 23, 1982, Pat. No. 4,439,563. This application Dec. 29, 1983, Ser. No. 566,798

Int. Cl.³ C08K *5/35*

U.S. Cl. 524—96 **3 Claims**

1. A method for making a white pigmented water based concrete cure by predispersing a white pigment and mixing the pigment dispersion with a clear resin/wax emulsion concentrate and let down water comprising the steps of:

adding dispersing water to a disperser vessel means;

adding a volatile base to the disperser vessel means;

activating disperser means of the disperser vessel means;

adding a fatty acid to the disperser vessel means whereby the fatty acid combines with the volatile base thereby forming an anionic emulsifier;

adding a white pigment to the disperser vessel means;

dispersing the white pigment;

mixing the pigment dispersion with a clear resin/wax emulsion concentrate and let down water; and thereby, forming a white pigmented concrete cure having a reflectancy value of at least 60 and having water present in the range of from about 60% to about 85% by weight and resin/wax solids present in the range of from about 13% to about 30% by weight.

4,495,320

3,6-DI-T-BUTYL-2-NAPHTHYL CATECHOL PHOSPHITE AND COMPOSITIONS THEREOF

Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 27, 1983, Ser. No. 498,622

Int. Cl.³ C08K *5/34, 5/52*

U.S. Cl. 524—101 **10 Claims**

1. A composition comprising materials subject to degradation and a stabilizing amount of 3,6-di-t-butyl-2-naphthyl catechol phosphite.

4,495,321

POLYIMIDE AND/OR POLYAMIDE-IMIDE COMPOSITIONS IN MIXED SOLVENTS

Mary T. Arnold, Upland, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1983, Ser. No. 562,680

Int. Cl.³ C08L *79/08*

U.S. Cl. 524—104 **5 Claims**

1. A coating composition comprising a polymer selected from polyamide-imides and polyimides dissolved in a mixture of solvents which consist essentially of

(a) from about 10 percent to about 90 percent by weight N-methyl pyrrolidone and

(b) correspondingly from about 90 percent to about 10 percent by weight acetophenone wherein the solids content of the polymer solvent solution is between about 5 percent and 40 percent by weight based on the total weight of solution, said acetophenone having a purity of at least 98.5 percent.

4,495,322

SILICONE RESIN COATING AGENT

Ralf Liebler, Darmstadt, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

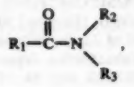
Continuation of Ser. No. 411,641, Aug. 26, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 586,632

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135241

Int. Cl.³ C08K *5/16*

U.S. Cl. 524—198 **9 Claims**

1. An aqueous coating formulation having improved storage stability, said formulation having a pH between 3 and 6 comprising (A) a silicone resin condensation product prepared by condensing a partially hydrolyzed organosilicon compound in the presence of a catalytic amount of an acid and (B) from 0.01 to 1 mole, per mole of organosilicon compounds present in said coating formulation, of an amide of the formula



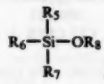
wherein

R_1 is hydrogen, linear or branched alkyl having 1 to 22 carbon atoms, phenyl, substituted phenyl, or —OR_4 where R_4 is alkyl having 1 to 18 carbon atoms, phenyl, naphthyl, or substituted phenyl or naphthyl, or R_1 is

where R_2' and R_3' are the same or different and have the same meanings as R_2 and R_3, defined below, and

R_2 and R_3, which are the same or different, taken alone are hydrogen, alkyl having from 1 to 4 carbon atoms, phenyl, or substituted phenyl, or wherein R_2 and R_3, taken to-

gether with the nitrogen atom, or R_1 and R_3, taken together with the bridging nitrogen and carbonyl carbon atoms, form a heterocycle having 5 to 7 members or such a heterocycle containing further nitrogen or oxygen atoms, and wherein said organosilicon compound which is condensed is a partial hydrolysis product of a compound of the formula



wherein

R_5, R_6 and R_7 independently of one another are $-(O)_nR_9$ where R_8 and R_9 are alkyl having from 1 to 5 carbon atoms, or vinyl, allyl, or phenyl and n is zero or one, or

R_8 and/or R_9 are $H[NH-(CH_2)_{m'}]_p-NH(CH_2)_m-$, m and m' are each an integer from 1 to 6, and p is zero or one, or

R_8 and/or R_9 are

where q is an integer from 1 to 6, or

R_8 and/or R_9 are

where R_{10} is hydrogen or methyl and r is an integer from 1 to 6,

with the proviso that when R_8 or R_9 are not alike one of them is alkyl having from 1 to 5 carbon atoms or is vinyl, allyl, or phenyl.

4,495,323

SOLVENT RESISTANT POLYMERIC COMPOSITION

James H. Collins, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 542,866, Oct. 17, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,452

Int. Cl.³ C08L *23/08, 53/02;* **C08K** *3/26, 5/01*

U.S. Cl. 524—426 **7 Claims**

1. A polymeric composition comprising:

(a) about 5 to about 90 parts by weight of a radial $(AB)_xBA$ block copolymer where x is greater than 1, each block A being a monoalkenyl arene polymer block having an average molecular weight between about 5,000 and about 30,000, each block B being an elastomeric conjugated diene polymer block having an average molecular weight between about 15,000 and about 300,000, the blocks A comprising between about 20 and about 40 percent by weight of said block copolymer having a melt index between about 0.1 and about 30.0;

(b) 0–100 parts of a radial $(C\ D)_xDC$ block copolymer where x is greater than 1, each block C being a monoalkenyl arene polymer block having an average molecular weight between about 20,000 and about 40,000, each block D being an elastomeric conjugated diene polymer block having an average molecular weight between about 15,000 and about 300,000, the blocks C comprising about 40 to about 55 percent by weight of said block copolymer;

(c) about 10 to about 95 parts by weight of a linear low density polyethylene having a melt index between about 0.1 and 30, and a density greater than about 0.90 grams per cubic centimeter;

(d) about 0 to about 200 parts by weight of a hydrocarbon rubber extending oil;

(e) about 0 to about 150 parts by weight of a polystyrene resin; and

(f) about 0 to about 200 parts by weight of a finely divided filler.

7. A shoe sole having the composition of claim 1.

4,495,324

GLASS REINFORCED POLYAMIDE COMPOSITION CONTAINING ACRYLIC CORE/SHELL POLYMER

Varkki P. Chacko, Summit, and Timothy J. Kraft, Pompton Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 544,678, Oct. 24, 1983, abandoned. This application Nov. 10, 1983, Ser. No. 550,691

Int. Cl.³ C08K *3/40*

U.S. Cl. 524—504 **13 Claims**

1. A composition comprising:

a polyamide;

a reinforcing amount of glass fiber; and

from 1 to 25 percent by weight based on the weight of the polyamide of a core/shell polymer wherein the core/shell polymer comprises 40 to 90 parts by weight of an elastomeric core comprising an acrylic elastomer and 10 to 60 parts by weight of a rigid shell, the shell consisting essentially of from 20 to 100 parts by weight of a methacrylic ester, 0 to 80 parts by weight of styrene, and 0 to 50 parts of weight of acrylonitrile.

4,495,325

POLYMER-BOUND ULTRAVIOLET STABILIZER COATING COMPOSITIONS CONTAINING CROSS LINKERS

Michael DeBergalis, and Robert P. O'Fee, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1983, Ser. No. 469,688

Int. Cl.³ C08L *61/28, 37/00*

U.S. Cl. 524—507 **34 Claims**

1. A coating composition containing an ultraviolet stabilizer polymer which absorbs ultraviolet radiation and effectively dissipates the resulting energy as heat, but which does not contain effective amounts of ultraviolet sensitizer, said polymer of said coating composition comprising, by weight, 12.5–50% of a first moiety which absorbs ultraviolet energy said first moiety being bound to a polymeric second moiety to produce said ultraviolet stabilizer polymer containing, by weight, 12.5–80% of said first moiety,

said coating composition also containing a cross-linking species which aids in cure of coatings by cross linking with said stabilizer polymer.

4,495,326

RUBBER COMPOUNDS CONTAINING ZINC DIMETHACRYLATE

Thomas F. Donatelli, and Philip F. Murray, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 9, 1984, Ser. No. 569,418

Int. Cl.³ C08K *3/04;* **C08L** *51/00, 31/00*

U.S. Cl. 524—533 **5 Claims**

1. A sulfur-curable natural rubber compound comprising:

(a) 100 parts by weight of natural rubber;

(b) from about 20 to 120 parts by weight of carbon black;

(c) from about 1 to about 15 parts by weight of sulfur; and

(d) from about 0.2 to about 15 parts by weight of a zinc dimethacrylate powder having a surface area of from about 3.7 to about 5.4 m^2/g or more.

4,495,327
AQUEOUS CATIONIC SURFACE-COATING SYSTEM AND ITS USE

Hans-Uwe Schenck, Wachenheim; Rainer Blum, Ludwigshafen; Erich Gulbins, Heidelberg; Fritz-Erdmann Kempter, Feldafing, and Eberhard Schupp, Schwetzingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 371,012, Apr. 22, 1982, abandoned. This application Jul. 18, 1983, Ser. No. 515,026
Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118418
Int. Cl.³ C09D 3/80, 5/40
U.S. Cl. 524—556 4 Claims

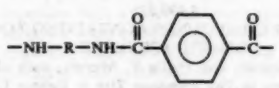
1. An aqueous cationic surface-coating system containing an olefinically unsaturated surface-coating binder having basic nitrogen groups, which binder contains α,β-olefinically unsaturated amidomethyl groups or α,β-olefinically unsaturated carboxylic acid ester groups or products derived from a diene polymer or a mixture of these products wherein some or all of the basic nitrogen groups are converted into salts with acid, which surface-coating system contains from 1 ppm to 1% by weight (metal content, based on the binder) of a Co, Mn, Pb, Ce, Zr, Ca, Zn, Fe, Al, Cu, Ni or Cd complex, if appropriate in combination with an inhibitor or an initiator which supplies free radicals or with a mixture of an inhibitor and an initiator which supplies free radicals.

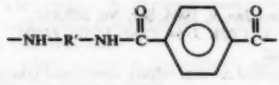
4,495,328
CRYSTALLINE COPOLYAMIDES FROM TEREPHTHALIC ACID AND HEXAMETHYLENEDIAMINE AND TRIMETHYLHEXAMETHYLENEDIAMINE

Wassily Poppe, Lombard; Yu-Tsai Chen, Glen Ellyn, and Larry W. Autry, Lisle, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 466,903, Feb. 16, 1983, abandoned. This application Apr. 19, 1984, Ser. No. 601,909
Int. Cl.³ C08G 69/26
U.S. Cl. 524—606 21 Claims

1. A crystalline injection moldable polyamide copolymer of terephthalic acid and hexamethylenediamine and trimethylhexamethylenediamine which copolymer has a heat deflection temperature of at least about 240° C. when molded and filled with glass fibers, glass beads or graphite fibers, comprising the following recurring structural units:


(A)


(B)

wherein R is a straight chain aliphatic hydrocarbon radical containing 6 carbon atoms and R′ is a tri-methyl substituted saturated hydrocarbon radical 6 carbon atoms in length with two of three methyl groups on the same carbon atom wherein the ratio of A units to B units is about 55:45 to about 95:5.

4,495,329
PHENOLIC RESIN COMPOUNDS

Robert E. Blair, Columbus, and Michael R. Peede, Ahoskie, both of Ohio, assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 479,125, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 385,124, Jun. 4, 1982, abandoned, which is a continuation of Ser. No. 224,103, Jan. 5, 1981, abandoned. This application Feb. 16, 1984, Ser. No. 580,701
Int. Cl.³ C08K 5/10
U.S. Cl. 524—774 15 Claims

1. A thermosetting phenolic resin compositions comprising a phenol-aldehyde resole resin produced in the presence of a plasticizing amount of a phenolic ester reaction product, said product being made by the reaction of an unsaturated fatty acid containing from 8 to 22 carbon atoms and a phenol in the presence of a mineral acid.

4,495,330
CROSSLINKERS FOR RTV COMPOSITIONS

Rack H. Chung, deceased, late of Saratoga County, N.Y., and by Betsy A. Chung, executrix, 12 Appletree Ct., Clifton Park, N.Y. 12065, assignors to General Electric Company, Waterford, N.Y.

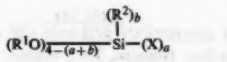
Filed May 25, 1983, Ser. No. 497,777
Int. Cl.³ C08K 3/10
U.S. Cl. 524—783 29 Claims

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a translucent and colorless tack-free elastomer comprising:

(A) a polydiorganosiloxane base polymer wherein the silicon atom at each chain end is terminated with at least two alkoxy radicals;

(B) an effective amount of condensation catalyst;

(C) a stabilizing amount of silane scavenger for hydroxy functional groups having the formula:



where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from alkyl, alkylether, alkylester, alkylketone and alkylcyano or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radical, X is a cycloaliphatic enoxy radical, a is a whole number equal to 1 to 4, b is a whole number equal to 0 to 3, and the sum of a+b equals 1 to 4; and

(D) an effective amount of curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof.

10. The composition of claim 1 further comprising an effective amount of adhesion promoter.

11. The composition of claim 1 further comprising an effective amount of sag control agent.

4,495,331
SCAVENGERS FOR RTV SILICONE RUBBER COMPOSITIONS

Rack H. Chung, deceased, late of Saratoga County, N.Y. (by Betsy A. Chung, executor), assignor to General Electric Company, Waterford, N.Y.

Filed May 25, 1983, Ser. No. 497,780
Int. Cl.³ C08K 3/10
U.S. Cl. 524—783 44 Claims

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in

the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer, comprising:

(A) a polydiorganosiloxane base polymer wherein the silicon atom at each chain end is terminated with at least two alkoxy radicals;

(B) an effective amount of condensation catalyst; and

(C) a stabilizing amount of organic scavenger for hydroxy groups which has the formula:

$$R\text{-}(N{=}C{=}O)_x$$

where R is a linear or cyclic aliphatic group or an aromatic group, and x equals at least 1.

19. The composition of claim **1** further comprising up to about 700 parts by weight filler.

20. The composition of claim **19** wherein the filler is selected from the group consisting of titanium dioxide, zirconium silicate, silica aerogel, iron oxide, diatomaceous earth, fumed silica, carbon black, precipitated silica, glass fibers, polyvinylchloride, ground quartz and calcium carbonate.

4,495,332

PROCESS FOR PRODUCING AROMATIC SULFIDE POLYMERS

Zenya Shiiki; Yo Iizuka, and Yukichika Kawakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,837

Claims priority, application Japan, Jul. 29, 1982, 57-131166; Apr. 11, 1983, 58-63256

Int. Cl.³ C08F *2/16*

U.S. Cl. 524—800 **11 Claims**

1. A process for producing an aromatic sulfide polymer which comprises heating, to a temperature of 100° to 250° C. in an aprotic solvent, a mixture consisting essentially of:

(A) a dihaloaromatic compound;

(B) a substantially anhydrous fine powder of a sulfide of a metal selected from the group consisting of an alkali metal and an alkaline earth metal;

(C) a substantially anhydrous fine powder of a carbonate of a metal selected from the group consisting of an alkali metal and an alkaline earth metal, or a mixture of the metal carbonate and a hygroscopic inorganic salt; and

(D) water dissolved in the aprotic solvent in a quantity of 0.01 to 2 mols per gram equivalent of the metal sulfide.

4,495,333

POLYPHENYLENE OXIDE/POLYSTYRENE BLOCK COPOLYMERS

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 390,094, Jun. 21, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,795

Int. Cl.³ C08L *81/02, 85/02*

U.S. Cl. 525—150 **15 Claims**

1. A block copolymer comprising a phosphoryl-coupled polyphenylene oxide radical and polyfunctional polystyrene radical.

4,495,334

ETHYLENE POLYMER BLEND COMPOSITIONS

Kazuo Matsuura, Tokyo; Noboru Yamaoka; Shinichi Yanahashi, both of Yokohama; Katumi Usui, Yokosuka, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Continuation of Ser. No. 257,647, Apr. 27, 1981, abandoned. This application Jan. 4, 1983, Ser. No. 455,472

Claims priority, application Japan, Apr. 3, 1980, 55-56363

Int. Cl.³ C08L *23/20, 23/04*

U.S. Cl. 525—240 **4 Claims**

1. A polymer composition having a melt index of 0.01 to 5.0 and a density of 0.880 to 0.935, said polymer composition comprising a blend of:

(1) 40 to 70 parts by weight of an ethylene/α-olefin copolymer having an intrinsic viscosity determined in decalin at 135° C. in the range of from 3.5 to 8.0 dl/g and a density in the range of from 0.850 to 0.903 which copolymer is obtained by copolymerizing ethylene with an α-olefin having 4 to 12 carbon atoms in a substantially liquid solvent-free vapor phase condition and in the presence of a catalyst comprising a solid ganoaluminum compound, said solid substance containing magnesium and titanium and/or vanadium, and

(2) 60 to 30 parts by weight of a high-pressure process polyethylene having an intrinsic viscosity determined in decalin at 135° C. of not higher than 1.3 dl/g and a density of 0.915 to 0.935.

4,495,335

SELF-CROSSLINKING HEAT-CURABLE BINDER

Michael Geist, Münster, and Horst Diefenbach, Nottuln, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,639

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215891

Int. Cl.³ C08L *67/04*

U.S. Cl. 525—438 **9 Claims**

1. A self-cross-linking heat-curable binder based on an organic synthetic resin which contains amino groups and esterified carboxyl groups and is water-dilutable due to neutralization with acids, in which the esterified carboxyl groups are activated in the alcohol component and are β-hydroxylalkyl ester groups or carbalkoxymethyl ester groups and said organic synthetic resin is an epoxy resin which has been prepared by reacting a polyglycidyl ester or ether with a compound which carries two groups which are reactive toward epoxy groups and at least one of said esterified carboxyl groups to give an intermediate produce having terminal epoxy groups, and reacting said terminal epoxy groups having open rings with a compound selected from the group consisting of primary amines, secondary amines, ketimines having a hydrogen atom on the nitrogen atom, and aminoalcohols blocked at the nitrogen atom or a polyurethane resin which has been prepared by reacting a diisocyanate with a compound which carries two groups which are reactive toward isocyanate groups and at least one of said esterified carboxyl groups to give an intermediate product having terminal isocyanate groups, and reacting said terminal isocyanate groups with a compound selected from the group consisting of primary amines, secondary amines, ketimines having a hydrogen atom on the nitrogen atom, aldimines having a hydrogen atom on the nitrogen atom, and aminoalcohols blocked at the nitrogen atom.

4,495,336

MERCAPTO-POLYCARBOXYLIC ACIDS

Rudolf H. Hausler, and Neil E. S. Thompson, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jun. 7, 1982, Ser. No. 385,351

Int. Cl.³ C23F *11/04;* E21B *43/22*

U.S. Cl. 252—8.55 E **20 Claims**

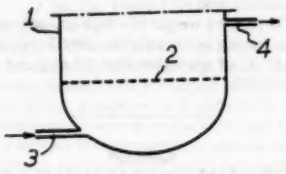
1. A process of inhibiting corrosion which comprises treating a system with a sulfidic sulfur-containing polycarboxylic acid having carboxylic groups attached to adjacent carbons, or a derivative thereof selected from the group consisting of anhydrides, salts, esters, amides, aminoamides, ester amides, polyamides, polyester amides, and cyclic amidines of said carboxylic acid.

4,495,337

PROCESS FOR THE BOTTOM DRAINAGE OF A FLUID-BED POLYMERIZATION REACTOR

Charles Raufast, Saint Julien Les Martigues, France, assignor to BP Chimie Societe Anonyme, Paris, France

Filed Feb. 24, 1983, Ser. No. 469,528
Claims priority, application France, Feb. 26, 1982, 82 03204
Int. Cl.³ C08F 2/00
U.S. Cl. 526—88 2 Claims



1. Process permitting the partial or total evacuation of a fluidised bed in which a polymerisation or a copolymerisation of gaseous alpha-olefin is being carried out on a solid fluidised catalyst, the said polymerisation or copolymerisation being effected in a reactor comprising in its bottom part a plate, a gas inlet situated between the said plate and the bottom of the reactor, a lateral pipe located above the said plate for the discharge of fluidised particles, a vertical evacuation piping having an opening at the level of the plate and leading into a funnel, the said vertical piping being occluded by a cock with high-speed opening, and a gas inlet tube leading into the said vertical piping between the plate and said cock, the process being characterised by the fact that:

the ratio of pressure existing in the reactor to that existing in said funnel when said cock with high-speed opening is closed, is greater than 5, the difference between these two pressures being greater than 0.4 MPa.

a quantity of gas is admitted via the gas inlet tube such that when said cock is closed, the gaseous stream in the vertical piping has a speed between approximatively 5 and 50 times the minimum speed of the gases which would cause fluidisation of the polymer particles in the said piping,

said partial evacuation is carried out by periodically opening and closing the said cock with high-speed opening.

4,495,338

COMPONENTS OF CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Adolfo Mayr, Ferrara, Italy; Ermanno Susa, Brussels, Belgium, and Ettore Giachetti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 267,624, Jun. 29, 1972, abandoned, which is a continuation of Ser. No. 878,535, Nov. 20, 1969, abandoned. This application Sep. 24, 1980, Ser. No. 190,375
Claims priority, application Italy, Nov. 21, 1968, 24008 A/68
The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—125 57 Claims

1. Components of catalysts for the polymerization of olefins comprising the product obtained by contacting a transition metal halide selected from titanium and vanadium halides in which the metal has a valence lower than 4, with an active form of an anhydrous magnesium dihalide, the titanium or vanadium halide being used in an amount less than 50% by weight with respect to the magnesium dihalide, and the active magnesium dihalide being characterized in that, in its X-rays powder spectrum, the most intense diffraction line present in the spectrum of the normal, non-active magnesium dihalide is less intense and, in its place, a broadened halo appears.

4,495,339

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE

Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,434
Int. Cl.³ C08F 20/52
U.S. Cl. 526—262 1 Claim

1. A method of retarding the rate of polymerization in a maleimide prepolymer comprising the step of adding an effective amount of norbornenyl end-capped reactant, said effective amount being substantially less than 1.0 mole fraction relative to the maleimide.

4,495,340

CURABLE MASSES PRODUCING CARBOXYFUNCTIONAL SILICONE COATINGS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 23, 1983, Ser. No. 565,074
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 34 Claims

1. A curable mass comprising the combination of:

(A) the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R represents a monovalent hydrocarbon radical, the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1 said resin containing from 0.1% to 5% by weight, based on the total weight of reactant (i), of hydroxyl radicals bonded to silicon atoms, and

(ii) a polyorganohydrogensiloxane;

(B) a carboxyfunctional silicone having the general unit formula $Q_aR'_bSiO_{(4-a-b)/2}$ wherein

Q is a caboxyfunctional radical,

R' is selected from the group consisting of monovalent hydrocarbon radicals, hydride radicals, and hydroxy radicals,

a has a value of 0 to 3,

b has a value of 0 to 3,

the sum of the values of a plus b is from 1 to 3, there being at least one Q radical and at least of R' radical selected from the group consisting of hydride radicals, vinyl radicals, and hydroxy radicals; and

(C) a catalytically effectiv amount of a catalyst.

4,495,341

EPOXY-MODIFIED POLYOLS AND POLYMER-POLYOLS USEFUL IN THE PREPARATION OF IMPROVED PLASTICS, INCLUDING POLYURETHANE FOAMS, ELASTOMERS AND THE LIKE

Paul Stamberger, Baltimore, Md., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 279,318, Jul. 1, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,608
Int. Cl.³ C08G 65/28
U.S. Cl. 528—110 4 Claims

1. The adduct formed by reaction of a polyol, having an average molecular weight of at least about 500 and a hydroxyl number in the range of about 20 to about 400 with an epoxy co-reactant in which the polyol, the epoxy co-reactant and the adduct are essentially free of ethylenic unsaturation.

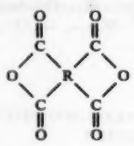
4,495,342
ISOIMIDE CONTAINING OLIGOMERS

Abraham L. Landis, Northridge, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation-in-part of Ser. No. 206,317, Jul. 24, 1981, Pat. No. 4,438,273. This application Sep. 26, 1983, Ser. No. 535,460
Int. Cl.³ C08G 73/06, 73/10, 73/12
U.S. Cl. 528—125 18 Claims

1. A polymerizable isoimide-containing oligomer prepared by

(a) reacting in a chosen organic solvent a dianhydride having the formula:

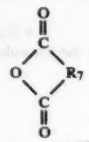


where R is a tetravalent organic group containing 2 to 27 carbon atoms, with a diamine having the formula:

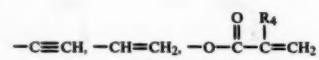
$$H_2N-R_5-NH_2$$

wherein R_5 is a divalent organic group containing 2 to 30 carbon atoms;

(b) reacting the product of (a) with a monoanhydride having the formula:



where R_7 is a radical containing an alkenylene group, a heterocyclic group, or a trivalent aryl group having an x radical substituted thereon wherein x is selected from the group consisting of



wherein R_4 is H or $-CH_3$, and CN

(c) cooling the reaction mixture produced in (b) to a selected temperature about at least as low as ambient temperature, and

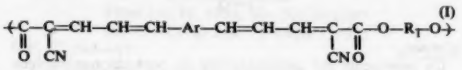
(d) adding to said reaction mixture at said selected temperature a chosen dehydrating agent to dehydrate and cyclize the product of (b) to thereby form said isoimide-containing oligomer.

4,495,343
VISIBLE LIGHT-SENSITIVE POLYESTER POLYMER AND VISIBLE LIGHT-SENSITIVE RESIN COMPOSITION CONTAINING SAID POLYMER

Kaoru Iwata, Hachioji; Tsuneo Hagiwara, and Hiroshi Matsuzawa, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

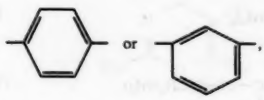
Filed Jun. 6, 1983, Ser. No. 501,395
Claims priority, application Japan, Feb. 23, 1983, 58-27716
Int. Cl.³ C08G 69/08, 69/44
U.S. Cl. 528—292 13 Claims

1. A substantially linear polyester polymer having sensitivity to visible light, said polymer containing at least 10 mole%, based on the entire polymer, of recurring units of the following formula



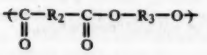
(I)

wherein Ar represents



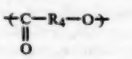
and R_1 represents a divalent aliphatic hydrocarbon group having not more than 20 carbon atoms, the chain of which may be interrupted by one or more oxygen atoms, and having a reduced viscosity of at least 0.2 dl/g.

7. The polymer of claim 1 which further contains 0 to 90 mole%, based on the entire polymer, of recurring units of the following formula



(II)

and/or



(III)

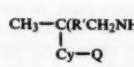
wherein R_2 represents a divalent hydrocarbon group having not more than 15 carbon atoms, R_3 represents a divalent aliphatic hydrocarbon group having not more than 20 carbon atoms, the chain of which may be interrupted by one or more oxygen atoms, and R_4 represents a divalent hydrocarbon group having 4 to 9 carbon atoms.

4,495,344
COPOLYAMIDE FROM CYCLOALIPHATIC SUBSTITUTED NONANE DIAMINE

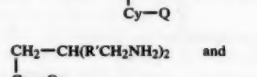
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 326,107, Nov. 30, 1981, Pat. No. 4,408,037, which is a division of Ser. No. 138,942, Apr. 9, 1980, Pat. No. 4,324,738, which is a division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Jun. 3, 1983, Ser. No. 500,745
Int. Cl.³ C08G 69/26
U.S. Cl. 528—340 21 Claims

1. As a composition of matter, copolyamides prepared by reacting at least one cycloalkylalkylenediamine from the group consisting of:



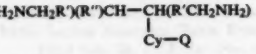
(XI)



(XII)

and (XIII)

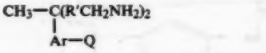
-continued



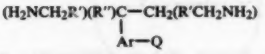
(XIV)

wherein

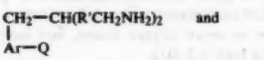
Cy represents the cyclohexylene or perhydronaphthylene radical, and at least one aralkylenediamine selected from the group consisting of:



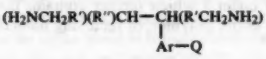
(VII)



(VIII)



and (IX)



(X)

wherein

Ar is a divalent phenylene or naphthylene radical,

wherein

R′ is an alkylene or alkylidene radical of at least one carbon atom; R″ is an alkyl radical of at least one carbon atom; Q is selected from the group consisting of —H, —X, —R‴, —N(R‴)$_2$, —NH$_2$′HX, —OR‴, —SH, —OH, and —SR‴; X is halogen and is fluorine, chlorine, bromine, or iodine; and R‴ is an alkyl radical of 1 to 6 carbon atoms; and each said —Ar—Q and Cy—Q contains 6 to 22 carbon atoms;

with at least one alpha, omega-hydrocarbon dicarboxylic acid of C_6 to C_{16} carbon atoms per molecule,

under reaction conditions suitable for forming said copolyamides resin.

4,495,345

OPTICAL ELEMENT AND OPTICAL POLYCARBONATE RESIN COMPOSITION FOR THE PREPARATION THEREOF

Sota Kawakami, Hachioji; Hideki Murata, Akishima; Satoshi Matsunaga, Hino, and Toshihiko Kiriki, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

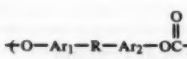
Filed Mar. 11, 1983, Ser. No. 474,464

Claims priority, application Japan, Mar. 18, 1982, 57-43841

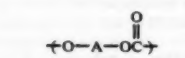
Int. Cl.^{3} C08G *63/62*

U.S. Cl. 528—372 **6 Claims**

1. An optical element including an optical resin composition consisting essentially of a polycarbonate, said optical resin composition having a melt flow rate of at least 5.0 grams/10 minutes as measured based on International Standards Organization Reference 1133 Standard at 230° C. and 5 kg, said optical resin composition having a glass transition point of at least 100° C., said polycarbonate having a major repeating unit represented by Formula I or II,



I



II

wherein Ar_1 and Ar_2 are each a cycloalkylene, R is selected from alkylene, cycloalkylene, —O—, —O—Ar_3—O—, —S—, —SO—, —SO_2—, —SO_2—Ar_3—SO_2—, —R_1—Ar_4—R_1—, —O—R_1—O—,

—CONH—R_1—NHCO—, or —Ar_5—R_1—; Ar_3 and Ar_4 are individually phenylene or bisphenylene; R_1 is an alkylene; R_2 is an alkyl, Ar_5 is a cycloalkylene; and A is selected from an alkylene, a cycloalkylene, —R_1—Ar_4—R_1—, —R_1—Ar-5—R_1—, —R_1—O—Ar_4—O—R_1—, or —R_1—O—Ar_4—X—Ar_4—O—R_1—; and X represents —SO_2—, —CO—, an alkylene group, or —R_1—Ar_4—R_1—.

4,495,346

METHOD OF PREPARING A DISACCHARIDE

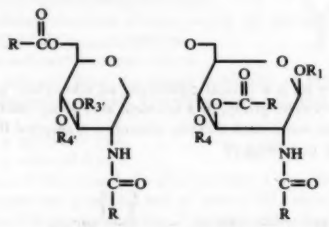
Laurens Anderson, Madison, Wis., and Mina A. Nashed, Alexandria, Egypt, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 248,692, Mar. 30, 1981, abandoned. This application Oct. 6, 1982, Ser. No. 433,055

Int. Cl.^{3} C07H *1/00*

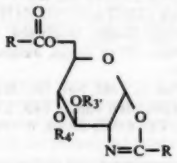
U.S. Cl. 536—18.5 **4 Claims**

1. A method of preparing a disaccharide of the formula:

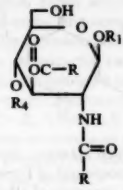


in which R is an alkyl, hydroxyalkyl or protected hydroxyalkyl group of 7 to 19 carbon atoms; R_1 is selected from allyl, benzyl, 1-propenyl, or trichloroethyl; R_3′ is selected from allyl, crotyl, 2-methoxyethoxymethyl, methylthiomethyl, or benzyl; R_4′ is hydrogen, chloroacetyl, or β-benzoylpropionyl; and R_4 is hydrogen or

said method comprising reacting a compound of the formula:



with a compound of the formula:



in which all symbols are as previously defined, in the presence of a coupling catalyst selected from p-toluenesulfonic acid and 2,6-dimethylpyridinium p-toluenesulfonate.

4,495,347

ANTIBIOTIC OXANOSINE AND PROCESS FOR THE PREPARATION THEREOF

Hamao Umezawa; Nobuyoshi Shimada, both of Tokyo; Hiroshi Naganawa, Honmachi; Tomohisa Takita, Asaka; Masa Hamada, Naito, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

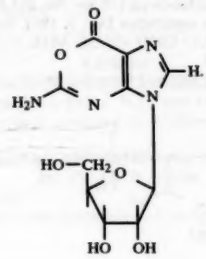
Division of Ser. No. 323,650, Nov. 20, 1981, Pat. No. 4,394,446. This application Nov. 5, 1982, Ser. No. 439,446

Claims priority, application Japan, Nov. 22, 1980, 55-165159

Int. Cl.³ C07H *17/00*

U.S. Cl. 536—24 **1 Claim**

1. The antibiotic oxanosine having the formula



4,495,348

DERIVATIVE OF CEPHAMYCIN C

Mamoru Kunishima, Saitama; Masahiko Yabuuchi, Yono; Minoru Masuda; Kikuo Imazumi, both of Ageo, and Hiroaki Hamano, Higashimurayama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

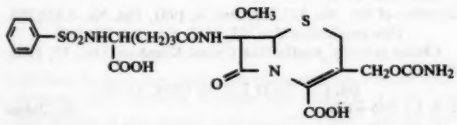
Filed Nov. 24, 1981, Ser. No. 324,475

Claims priority, application Japan, Dec. 4, 1980, 55-170274

Int. Cl.³ C07D *501/57;* **A61K** *31/545*

U.S. Cl. 544—021 **1 Claim**

1. An N-benzenesulfonyl derivative of cephamycin C represented by the following formula:



4,495,349

6-ARYLURACILS

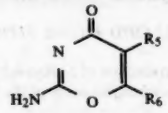
Harvey I. Skulnick; Herman W. Smith; Robert J. Smith, and Wendell Wierenga, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 11, 1983, Ser. No. 512,497

Int. Cl.³ C07D *265/10;* **A61K** *31/535*

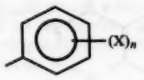
U.S. Cl. 544—97 **6 Claims**

1. A compound having the formula



III

wherein R_5 is hydrogen or bromine; and R_6 is a member selected from the group consisting of



III$_6$

wherein n is a number of from 0 to 3, inclusive; and

X is hydroxy, alkyl of from 1 to 8 carbon atoms, inclusive; alkoxy of from 1 to 5 carbon atoms, inclusive; alkylthio of from 1 to 5 carbon atoms, inclusive; nitro; —NX_1X_2; aminoalkyl of from 1 to 3 carbon atoms, inclusive; halogen; benzyl; aryl; furyl; pyridyl; or thiophene, and wherein X_1 and X_2 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive; or taken together with —N are a saturated cycloalkylamino group —N Cn'; wherein n' is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino, wherein each alkyl is from 1 to 3 carbon atoms, inclusive and pharmaceutically acceptable salts thereof.

4,495,350

HETEROCYCLIC ESTERS OF 2-NITRO-5-(O-CHLORO-P-TRIFLUOROMETHYL-PHENOXY)-BENZOIC ACID

Dieter Dürr, Bottmingen; Otto Rohr, Therwil, and Beat Böhner, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

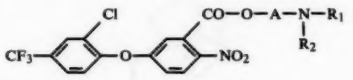
Division of Ser. No. 107,983, Dec. 28, 1979, Pat. No. 4,455,437. This application Sep. 13, 1982, Ser. No. 417,744

Claims priority, application Switzerland, Jan. 9, 1979, 168/79

Int. Cl.³ C07D *295/14, 213/55*

U.S. Cl. 544—167 **9 Claims**

1. A heterocyclic ester of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid of the formula



wherein

A is a branched-chain or straight-chain C_2–C_4alkylene group,

R_1 and R_2 taken together with the nitrogen atom to which they are attached or R_1 and a carbon atom of A taken together with the nitrogen atom to which R_1 is attached form a 3- to 7-membered heterocycle which optionally includes in its ring an oxygen atom, a sulfur atom or the group —NR_3— in which R_3 is hydrogen, C_1–C_4alkyl, phenyl or benzyl, and

R_2 when not forming part of the heterocyclic ring is a bond, hydrogen or C_1–C_4alkyl, and acid addition or quaternary ammonium salts thereof.

4,495,351
METHOD FOR THE PRODUCTION OF 1-ALKYL-6,7-METHYLENE-DIOXY-4(1H)-OXO-CINNOLIN-3-CARBOXYLIC ACIDS

Hans-Jörg Schmidt; Joachim Franke; Reingard Scheffler, all of Dresden; Heinz Tönjes; Günter Kammann, both of Radebeul, and Günther Dietz, Dresden, all of German Democratic Rep., assignors to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

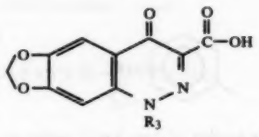
Filed Dec. 21, 1982, Ser. No. 451,539

Claims priority, application German Democratic Rep., Dec. 22, 1981, 236067[6]

Int. Cl.[3] C07D *491/056, 317/66*

U.S. Cl. 544—234 **15 Claims**

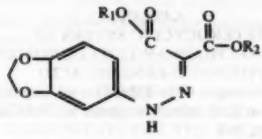
1. Method for the production of 1-alkyl-6,7-methylenedioxy-4(1H)-oxo-cinnolin-3-carboxylic acids of the formula V



V

$R_3 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$

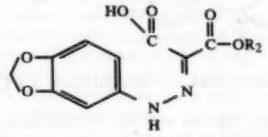
comprising diazotization of 3,4-methylenedioxyaniline by means of sodium nitrite and mineral acid to form 3,4-methylenedioxyphenyldiazonium salt and coupling this with malonic acid dialkylester, thereby producing mesoxalic acid dialkylester-3,4-methylenedioxyphenylhydrazone of the formula I



I

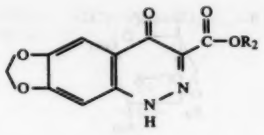
$R_1 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$
$R_2 = -CH_3; -C_2H_5; -C_3H_7; -C_4H_9$ and

isolating said compound of formula I, saponifying of one ester group of said compound of Formula I with 1 to 1.5 mol alkali, thereby producing monoalkylester of the Formula II



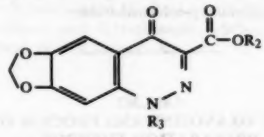
II

R_2 having the above-given meaning, isolating said compound of Formula II, reacting said compound of Formula II with a Friedel-Crafts catalyst selected from the group consisting of $POCl_3$, PCl_5 at 1–1.5 mol, excess of polyphosphoric acid and excess of polyphosphoric ester in the presence of a carboxylic acid anhydride into the 6,7-methylenedioxy-4(1H)-oxo-cinnolin-3-carboxylic acid alkylester of the Formula III



III

R_2 having the above-given meaning, separating the solid product and reacting said compound of Formula III with a C_1–C_4-alkyl halogenide in the presence of alkali in a solvent, to produce a compound of the formula IV



IV

R_2 and R_3 having the above-given meaning, isolating said compound of Formula IV and saponifying of one ester group of said compound of Formula IV.

4,495,352
HETEROCYCLIC SUBSTITUTED ARYLOXY 3-INDOLYL-TERTIARY BUTYLAMINOPROPANOLS

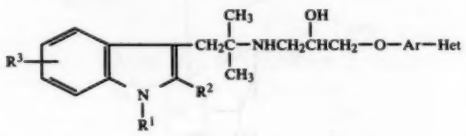
William E. Kreighbaum, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 011,819, Feb. 13, 1979, Pat. No. 4,314,943, which is a continuation-in-part of Ser. No. 815,138, Jul. 13, 1977, abandoned. This application Dec. 3, 1981, Ser. No. 327,293

Int. Cl.[3] C07D *403/12;* **A61K** *31/505*

U.S. Cl. 544—284 **3 Claims**

1. A compound selected from the group consisting of



and the pharmaceutically acceptable acid addition salts thereof wherein

R^1 or R^2 is hydrogen and the other is hydrogen or alkyl having 1 to 4 carbon atoms,

R^3 is H, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms and is located in the 4-, 5-, 6-, or 7-positions of the indole ring,

Ar—Het as a unit is selected from the group consisting of 4-alkyl-7-alkoxyquinazolin-6-yl, and 4-alkyl-6-alkoxyquinazolin-7-yl wherein said alkyl and alkoxy groups have 1 to 4 carbon atoms.

4,495,353
PROCESS FOR SUBSTITUTION OF AROMATIC ORGANIC COMPOUNDS

Robert J. Bryant, Stanley, England, assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 327,714, Dec. 4, 1981, Pat. No. 4,422,955. This application Jun. 13, 1983, Ser. No. 504,095

Claims priority, application United Kingdom, Dec. 17, 1980, 8040383

Int. Cl.[3] C07D *215/16;* **C07C** *41/16*

U.S. Cl. 546—178 **32 Claims**

1. A process for substituting for a halogen atom attached to

the nuclear carbon atom of an aromatic ring, wherein the halogen-substituted aromatic ring comprises the whole or part of a partially or wholly aromatic substrate selected from the group consisting of a monocyclic carbocyclic compound, a polycyclic carbocyclic compound, a monocyclic heterocyclic compound and a polycyclic heterocyclic compound; a substituent of the formula O—R, wherein R represents a substituent selected from the group consisting of alkyl having from 1 to 6 carbon atoms; which process comprises reacting said substrate with an alcoholate of the formula:

$$M^{n+}[O—R]_n^{\ominus}$$

wherein M represents an alkali metal atom; n is the valency of M, and R is as defined above, in the presence of a catalytically-effective amount of an active catalyst mixture comprising:

(i) a formic acid ester of an organic alcohol having the formula:

$$R^2—O—CO—H$$

wherein R^2 represents alkyl having from 1 to 4 carbon atoms, and

(ii) a cuprous salt:

in a liquid medium which is a solvent for the catalyst mixture and in which the substrate is at least partially soluble, under substantially anhydrous conditions and a non-oxidizing atmosphere for a time and at a temperature which will achieve substitution of the O—R substituent for the halogen substituent, wherein the temperature does not exceed 120° C. and based on one mole of the substrate, the cuprous salt and formic acid ester each is employed in an amount of about 0.01 to 3 moles and the alcoholate is employed in an amount of from about 0.9 to 10 moles.

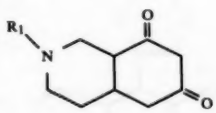
4,495,354

PROCESS FOR BICYCLIC DIKETONES

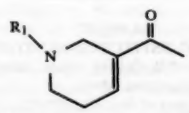
David L. Coffen, Glen Ridge, N.J., and Urs O. Hengartner, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 29, 1982, Ser. No. 363,332
Int. Cl.³ C07D 217/04
U.S. Cl. 546—146 **3 Claims**

1. A process for the preparation of bicyclic diketones of the formula



wherein R_1 is lower alkyl of 1 to 7 carbon atoms or phenyl-lower alkyl of 1 to 7 carbon atoms wherein phenyl can be unsubstituted or substituted by one or more groups selected from the group consisting of lower alkyl of 1 to 7 carbon atoms and halogen which comprises the steps of (a) reacting a compound of the formula



wherein R_1 is as previously described, or a salt thereof with a di-lower alkyl malonate, wherein lower alkyl is of 1 to 7 carbon atoms, in the presence of a lower alkanol and an alkali metal alkoxide; and (b) treating the resulting reaction mixture sequentially with a base and then with an acid.

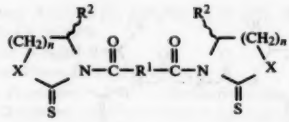
4,495,355

OPTICALLY-ACTIVE DIAMIDE DERIVATIVES

Eiichi Fujita, Kyoto; Yoshimitsu Nagao, Uji; Takao Ikeda, and Takehisa Inoue, both of Kyoto, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

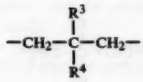
Filed Dec. 9, 1982, Ser. No. 448,505
Claims priority, application Japan, Dec. 11, 1981, 56-200625
Int. Cl.³ C07D 41/06
U.S. Cl. 546—208 **6 Claims**

1. An optically active diamide of the formula

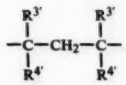


[I]

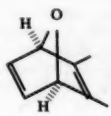
wherein R^1 is a divalent group which will, upon substitution of one of the heterocyclic groups in formula I with a nucleophilic reagent, stand as an asymmetric center in the substitution product, said R^1 being selected from the group consisting of (1) a group of the formula



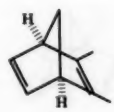
wherein R^3 and R^4 are different from each other and are selected from the group consisting of hydrogen; alkyl of 1–4 carbon atoms which may be substitued by halogen, alkoxyl or aryl; amino which may be protected by acetyl, propionyl, butyryl, benzoyl, benzyloxycarbonyl, tert-butyloxycarbonyl, p-methoxybenzyloxycarbonyl, methoxymethyl, methoxyethoxymethyl, tetrahydrofuryl or tetrahydropyranyl; and hydroxyl which may be protected by one of said amino-protecting groups, (2) a group of the formula



wherein $R^{3'}$ and $R^{4'}$ are different from each other and have the same meanings as R^3 and R^4 defined above, or $R^{3'}$ and $R^{4'}$ may together form an ethylene, propylene or butylene group, (3) a group of the formula



and (4) a group of the formula



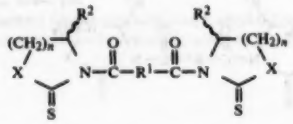
R^2 is a substituent which has such a configuration and a molecular size that the regioselectivity in the substitution reaction of the heterocyclic residue in the formula I with a nucleophilic reagent can be determined by a stereochemical interaction with the substituent R^1, said R^2 being

selected from the group consisting of hydroxyalkyl of 1–4 carbon atoms, alkoxyalkyl of 2–4 carbon atoms, carboxyl, alkoxycarbonyl of 2–9 carbon atoms, a mono- or di-alkyl substituted amidecarbonyl group, and alkyl of up to 4 carbon atoms the steric configuration of the two asymmetric carbon atoms to which the R^2 substituents are attached being identical,

X is sulfur or oxygen, and

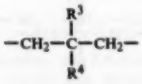
n is an integer which is 1 or 2.

2. A process for producing an optically active diamide of the formula

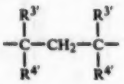


[I]

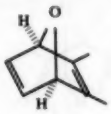
wherein R^1 is a divalent group which will, upon substitution of one of the heterocyclic groups in formula I with a nucleophilic reagent, stand as an asymmetric center in the substitution product, said R^1 being selected from the group consisting of (1) a group of the formula



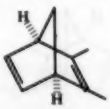
wherein R^3 and R^4 are different from each other and are selected from the group consisting of hydrogen; alkyl of 1–4 carbon atoms which may be substituted by halogen, alkoxyl or aryl; amino which may be protected by acetyl, propionyl, butyryl, benzoyl, benzyloxycarbonyl, tert-butyloxycarbonyl, p-methoxybenzyloxycarbonyl, methoxymethyl, methoxyethoxymethyl, tetrahydrofuryl or tetrahydropyranyl; and hydroxyl which may be protected by one of said amino-protecting groups, (2) a group of the formula



wherein $R^{3'}$ and $R^{4'}$ are different from each other and have the same meanings as R^3 and R^4 defined above, or $R^{4'}$ and $R^{4'}$ may together form an ethylene, propylene or butylene group, (3) a group of the formula



and (4) a group of the formula

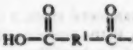


R^2 is a substituent which has such a configuration and a molecular size that the regioselectivity in the substitution reaction of the heterocyclic residue in formula I with a nucleophilic reagent can be determined by a stereochemical interaction with the substituent R^1, said R^2being selected from the group consisting of hydroxyalkyl of 1–4 carbon atoms, alkoxyalkyl of 2–4 carbon atoms, carboxyl, alkoxycarbonyl of 2–9 carbon atoms, a mono- or di-alkyl substituted amidecarbonyl group, and alkyl of up to 4 carbon atoms, the steric configuration of the two asymmetric carbon atoms to which the R^2 substituents are attached being identical,

X is sulfur or oxygen, and

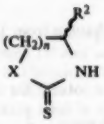
n is an integer which is 1 or 2,

which process comprises subjecting a dicarboxylic acid of the formula



[II]

wherein R^1 is as defined above, or an anhydride thereof, and a heterocyclic compound of the formula



[III]

wherein R^2, X and n are as defined above, to a condensation reaction in the presence of a condensation agent.

4,495,356

1,4-DIHYDROPYRIDINE COMPOUND

Yoichi Inoue, Omiya; Toshio Matsumoto, Ageo; Hirosuke Niwa, Kawaguchi; Kenichi Suzuki, Saitama, and Yasuo Hoshide, Tokyo, all of Japan, assignors to Nikken Chemicals Co., Ltd. and Institute of Organic Synthesis Academy of Sciences Latvian SSR., both of Tokyo, Japan

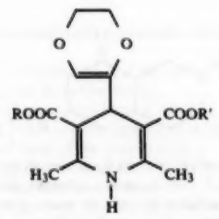
Filed Feb. 22, 1983, Ser. No. 468,663

Claims priority, application Japan, Feb. 23, 1982, 57-026790

Int. Cl.³ C07D *405/04*

U.S. Cl. 546—268 **4 Claims**

1. 1,4-Dihydropyridine compound having the general formula:



[I]

wherein R and R′ are independently a methyl, ethyl, or n-propyl group.

4,495,357

PYRIDYL-SUBSTITUTED-BENZOFURANS

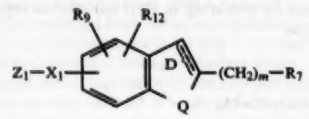
Roy A. Johnson, Norfolk County, Mass., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,622, Jun. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 279,374, Jul. 1, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,306

Int. Cl.³ C07D *405/06*

U.S. Cl. 546—269 **33 Claims**

1. A compound of the formula I



I

wherein Z_1 is
(a) 4-pyridinyl,
(b) 3-pyridinyl, or
(c) 3-pyridinyl substituted at the 4 position by
(1) —OCH_3,
(2) —$N(CH_3)_2$, or
(3) NH_2, or
(d) 3-pyridinyl substituted at the 2, 4, 5, or 6 position by chlorine;
wherein X_1 is
(a) —$(CH_2)_n$—,
(b) —CH(OH)— or
(c) —C(O)—;
wherein R_1 is hydrogen, a pharmacologically acceptable cation, (C_1–C_{12}) alkyl, (C_3–C_{10}) cycloalkyl, (C_7–C_{12}) aralkyl, phenyl, phenyl mono-, di-, or trisubstituted by chloro, (C_1–C_3) alkyl, or phenyl para-substituted by
(a) —NHCO—R_{25},
(b) —O—CO—R_{26},
(c) —CO—R_{24},
(d) —O—CO—(p-Ph)—R_{27}, or
(e) —CH=N—NH—CO—NH_2,
wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; and R_{27} is hydrogen or acetamido, and wherein —(p-Ph) is 1,4-phenylene;
wherein R_7 is
(a) hydrogen,
(b) —CH_2OH,
(c) —$COOR_1$,
(d) —$CH_2N(R_4)_2$,
(e) —CN or
(f) —C(O)—R_4;
wherein R_4 is
(a) hydrogen,
(b) (C_1–C_4)alkyl, or
(c) phenyl;
wherein R_9 is attached at the 7-position and is
(a) hydrogen,
(b) (C_1–C_4)alkyl
(c) fluoro,
(d) chloro,
(e) bromo, or
(f) —OCH_3;
wherein R_{12} is hydrogen, or, R_9 and R_{12} when taken together and attached to contiguous carbon atoms form —O—CH_2—O—;
wherein D represents a single or a double bond;
wherein m is an integer from 0 to 4, inclusive; and
wherein n is an integer from 0 to 1, inclusive; including, pharmacologically acceptable acid addition salts thereof with the proviso that when Z_1 is 4-pyridinyl or 3-pyridinyl and n is zero R_7 is other than hydrogen and with the further proviso that when X_1 is —(CH_2)— and m is zero, R_7 is other than H.

4,495,358

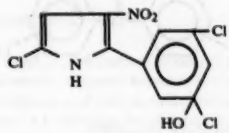
ANTIBIOTIC PYRROLOMYCIN E

Masao Koyama, Yokohama; Takashi Tsuruoka, Kawasaki; Norio Ezaki, Yokohama; Keinosuke Miyauchi, Yokohama, and Shigeharu Inouye, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,658
Claims priority, application Japan, Dec. 23, 1981, 56-206967
Int. Cl.³ C07D *205/10*; A61K *31/40*
U.S. Cl. 548—550 **2 Claims**

1. An antibiotic, pyrrolomycin E having the following properties:
Elementary Analysis (by weight): C, 39.10%, H, 1.61%; N, 8.94%; Cl, 34.88%;
Molecular Weight: 306;
Molecular Formula: $C_{10}H_5N_2O_3Cl_3$;
Melting Point: above 250° C. (decomposition);
Optical Rotation: $[\alpha]_D^{25}=0$ (C=0.5, methanol);
Ultraviolet Absorption Spectrum: as shown in FIG. 1;
Infrared Absorption Spectrum: as shown in FIG. 2;
The characteristic absorption bands, as determined using the potassium bromide tablet method, are 3320, 1560, 1475, 1380, 1290, 1045 cm^{-1};
Color Reaction: Positive for the iodine reaction and Lemieux reaction, and negative for the ninhydrin reaction;
Appearance and Color: Yellow needle-shaped crystals (weak acidic substance);
Rf Value on Thin Layer Chromatography (silicagel, 60F254, E. Merck): 0.6 (benzene-ethyl acetate-acetic acid (100:20:1));
Solubility: Soluble in methanol, acetone, ethyl acetate, sparingly soluble in water, n-hexane.

2. An antibiotic pyrrolomycin E with a structural formula:



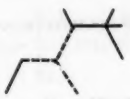
4,495,359

PRINS REACTION PRODUCTS OF DIISOAMYLENE, DERIVATIVES THEREOF, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

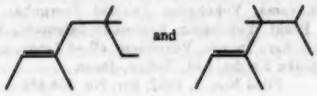
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 391,583, Jun. 24, 1982, Pat. No. 4,429,151, which is a division of Ser. No. 267,850, May 28, 1981, Pat. No. 4,359,412. This application May 5, 1983, Ser. No. 492,011
The portion of the term of this patent subsequent to Jan. 31, 2000, has been disclaimed.
Int. Cl.³ C07D *309/18*; C07C *29/03*, *67/313*
U.S. Cl. 549—356 **2 Claims**

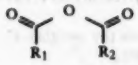
1. A product produced according to the process comprising the step of intimately admixing a mixture of diisoamylene derivatives defined according to the genus:



wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond and a compound having a structure selected from the group consisting of:



with an acyl anhydride having the structure:



wherein R_1 and R_2 are the same or different and each represents C_1–C_3 alkyl; in the presence of an acid catalyst and with formaldehyde or a formaldehyde precursor selected from the group consisting of trioxane, paraformaldehyde and formalin.

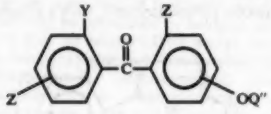
4,495,360

ULTRAVIOLET LIGHT ABSORBING AGENTS, METHOD FOR MAKING, COMPOSITIONS AND ARTICLES CONTAINING SAME

Blair T. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,361
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—436 **6 Claims**

1. An ultraviolet light absorbing agent having the formula,



where Q'' is

$$-CH_2(CH_2)_nSi(OCH_3)_{3-a}(OR)_a,$$

R is alkyl or alkanoyl having 2 to 6 carbon atoms, Y is H or OH, Z is H, OH, OQ'' or OW, where at least one Z is OH in the ortho position to the carbonyl if Y is H, W is C_mH_{2m+1}, m is 1 to 18, n=0, 1 or 2, and "a" has a value of from about 0.5 to about 2.5 inclusive.

4,495,361

POLYSILOXANE COMPOSITION WITH IMPROVED SURFACE WETTING CHARACTERISTICS AND BIOMEDICAL DEVICES MADE THEREOF

Gary D. Friends, Ontario; John B. Melpolder, Hilton; Jay F. Kunzler, Canandaigua, and Joon S. Park, Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,921
Int. Cl.³ C07F 7/10
U.S. Cl. 556—419 **10 Claims**

1. N-Alkenoyl trialkylsilyl aminates of the formula

$$CH_2{=}C(E)C(O)N(H)CH(G)(CH_2)_mC(O)OSi(R)_3$$

wherein
E is H or CH_3,
G is $(CH_2)_xC(O)OSi(R)_3$ or H,
R is CH_3, C_2H_5 or C_3H_7,
m is an integer from 0 to 15, and
x is an integer from 0 to 10, and
m+x is an integer from 1 to 15.

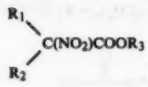
4,495,362

PROCESS FOR PREPARING ALKYL NITROACETATES

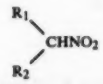
Tadatoshi Honda, Fujisawa, and Yoichi Hosono, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,188
Int. Cl.³ C07C 79/41, 79/42, 79/46
U.S. Cl. 560—20 **12 Claims**

1. A process for preparing an alkyl nitroacetate represented by the formula:



wherein R_1 and R_2 are a hydrogen atom, a linear or branched alkyl group having 1 to 7 carbon atoms, a benzyl group, a chlorophenyl group, a nitrophenyl group or phenyl group, and R_3 is a linear or branched alkyl group having 1 to 4 carbon atoms, comprising reacting a nitroparaffin represented by the formula:



wherein R_1 and R_2 are the same as described above, with alkyl phenyl carbonate represented by the formula:

$$ArOCOOR_3$$

wherein Ar is a chlorophenyl group or a phenyl group and R_3 is the same as described above, in a polar aprotic solvent in the presence of cyanide ion.

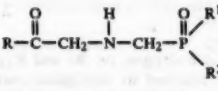
4,495,363

ESTERS OF N-PHOSPHONOMETHYLGLYCINE

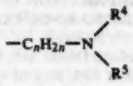
John E. Franz, Crestwood, Mo., assignor to Monsanto Co., St. Louis, Mo.

Division of Ser. No. 630,392, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 362,712, May 22, 1973, abandoned, which is a division of Ser. No. 170,385, Aug. 9, 1971, Pat. No. 3,799,758, which is a continuation-in-part of Ser. No. 123,057, Mar. 10, 1971, abandoned. This application Mar. 24, 1982, Ser. No. 361,219
Int. Cl.³ C07C 101/04; C07F 9/02
U.S. Cl. 560—155 **22 Claims**

1. A herbicidally active ester of N-phosphonomethylglycine represented by the formula:



wherein R, R^1, and R^2 are independently selected from the group consisting of —OH, —OR^3, and —OR^6 wherein R^3 is selected from the group consisting of monovalent hydrocarbon groups, monovalent hydrocarbonoxyhydrocarbon groups, each group containing from 1 to 18 carbon atoms, halogenated monovalent hydrocarbon groups, halogenated monovalent hydrocarbonoxyhydrocarbon groups, each group containing from 1 to 18 carbon atoms and from 1 to 3 halogens,



groups wherein n is an integer from 1 to 4 and R^4 and R^5 are independently selected from the group consisting of hydrogen, alkyl, and hydroxyalkyl, each having 1 through 4 carbon atoms, alkenyl having 2 through 4 carbon atoms, and R^4 and R^5 as defined above, together with the nitrogen atom can form a heterocyclic ring; and R^6 is a salt-forming cation selected from the group consisting of cations of alkali metals, alkaline earth metals, copper, zinc, manganese, nickel, ammonium, organic ammonium, provided that when the organic group is aryl the ammonium salt is a primary amine salt, and mixtures of such salts, provided that at least one of R, R^1, and R^2 is $—OR^3$, and further provided that no more than two of R, R^1, or R^2 are —OH, $—OR^3$, or $—OR^6$.

4,495,364

PROCESS FOR PRODUCING FLUORINATED ACID FLUORIDE HAVING ESTER GROUP

Masaaki Yamabe, Machida, and Seiji Munekata, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

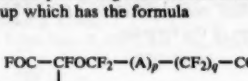
Continuation of Ser. No. 847,908, Nov. 2, 1977, abandoned. This application Feb. 14, 1980, Ser. No. 121,479

Claims priority, application Japan, Jul. 28, 1977, 52-89769

Int. Cl.³ C07C *67/14*

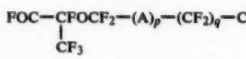
U.S. Cl. 560—180 **10 Claims**

1. A process for producing a fluorinated acid fluoride having an ester group which has the formula



wherein A represents a C_1–C_{10} bifunctional perfluoro group; p represents 0 or 1 ; q represents an integer of 1 to 8; and R represents an organic group

which comprises reacting a diacid fluoride having the formula



with an alcohol having the formula ROH.

4,495,365

N-ACYLSULFONAMIDE HERBICIDAL ANTIDOTES

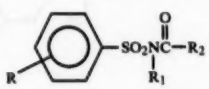
Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 208,912, Nov. 21, 1980, Pat. No. 4,347,380, which is a division of Ser. No. 31,906, Apr. 20, 1979, Pat. No. 4,266,078. This application Apr. 29, 1982, Ser. No. 372,881

Int. Cl.³ C07C *143/78*

U.S. Cl. 564—91 **6 Claims**

1. A compound of the formula



in which

R is selected from the group consisting of hydrogen, methyl, chloro, acetamido;

R_1 is selected from the group consisting of hydrogen, allyl and metal ion;

R_2 is selected from the group consisting of acetonyl, halophenyl, halophenylthioalkyl, and cyclohexanedione.

4,495,366

PROCESS FOR MAKING TRIFUNCTIONAL PRIMARY AMINE CROSSLINKER

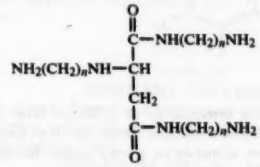
David A. Ley, Stamford, Conn., and Herbert Burkhard, Eastchester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 6, 1983, Ser. No. 529,233

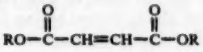
Int. Cl.³ C07C *102/06*

U.S. Cl. 564—160 **9 Claims**

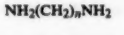
1. An improved process of making a trifunctional primary amine compound of the formula



wherein n=4-8; said process comprising (a) slowly adding an unsaturated diester of the formula



wherein R is an alkyl of 1–4 carbon atoms, to a solution of a diamine in an aromatic organic solvent, the solution being under reflux conditions and the diamine/diester molar ratio being at least about 3:1; wherein the diamine is of the formula



wherein n is the same as above; and (b) recovering said trifunctional primary amine compound.

4,495,367

HIGH CHARGE DENSITY, CATIONIC METHACRYLAMIDE BASED MONOMERS AND THEIR POLYMERS

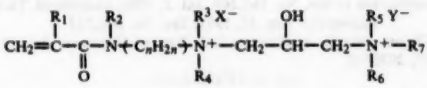
Laurence G. Dammann, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 395,420, Jul. 6, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 563,012

Int. Cl.³ C07C *103/70*

U.S. Cl. 564—208 **2 Claims**

1. A compound of the formula:



wherein:

R_1 and R_2 are hydrogen or methyl,

R_3, R_4, R_5, R_6 and R_7 are the same or different lower alkyls,

n is an integer ranging from 1 to 6, and

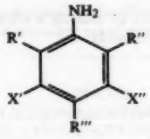
X and Y are the same or different anion.

4,495,368
PROCESS FOR THE PREPARATION OF META-HALOGENOANILINES

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jan. 31, 1983, Ser. No. 462,327
Claims priority, application France, Feb. 5, 1982, 82 02021
Int. Cl.³ C07C *85/00, 85/24*
U.S. Cl. 564—412 26 Claims

1. A process for the preparation of anilines substituted in the meta-position by a halogen atom, by the catalytic hydrogenation, in an anhydrous organic liquid phase, under the action of heat and under pressure, in the presence of noble metals from group VIII of the periodic classification, of amine-substituted and halogen-substituted benzene derivatives of the formula:



(I)

in which:

X' and X'', which are identical to or different from one another, each represent a halogen atom, an alkyl radical having 1 to 4 carbon atoms or an alkoxy radical having 1 to 4 carbon atoms, at least one of X' and X'' necessarily being a halogen atom, and one of X' and X'' may represent hydrogen, and

R', R'' and R''', which are identical to or different from one another, each represent a halogen atom, an alkyl radical having 1 to 4 carbon atoms, alkoxy radical having 1 to 4 carbon atoms, an optionally substituted phenyl, benzyl or phenoxy radical, at least one of these three symbols representing the halogen atom, and at most two of R', R'' and R'''may represent hydrogen,

wherein the hydrogenation reaction is carried out in the presence of a halogen-containing hydracid, or of a generator of this acid, in a chlorobenzene solvent.

4,495,369
PROCESS FOR THE PREPARATION OF NEOPENTYLAMINE

Friedrich Werner, Cologne; Heinz U. Blank, Odenthal; Günther Gramm, Cologne; Rudolf Braden, Odenthal, and Heinz Ziemann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 166,269, Jul. 2, 1980, abandoned. This application Sep. 22, 1981, Ser. No. 304,532
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928742
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—480 11 Claims

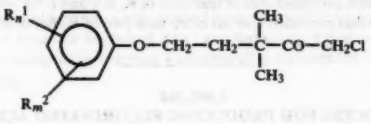
1. A process for the preparation of neopentylamino which is virtually free from amines with a higher degree of alkylation which comprises contacting neopentanol with ammonia at a temperature of 200° to 300° C. in the presence of a hydrogenation catalyst.

4,495,370
PREPARATION OF 5-ARYLOXY-1-CHLORO-3,3-DIMETHYL-2-PENTANONES

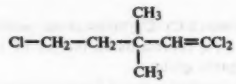
Manfred Jautelat, Burscheid; Dieter Arlt, Cologne, and Gerhard Jäger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,611
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222221
Int. Cl.³ C07C *45/42*
U.S. Cl. 568—322 6 Claims

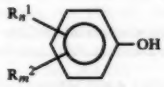
1. A process for the preparation of a 5-aryloxy-1-chloro-3,3-dimethyl-2-pentanone of the formula



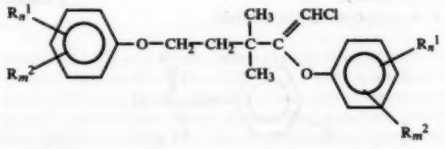
in which R^1 and R^2 each independently is halogen, alkyl having 1 to 4 carbon atoms, alkoxy or alkylthio each having 1 to 2 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 2 carbon atoms and 1 to 5 halogen atoms cyclohexyl, dialkylamino having 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, alkoxy-carbonyl having 1 to 4 carbon atoms in the alkyl moiety, phenyl or halophenyl, m and n each independently is an integer from 0 to 5, and $m+n \leqq 5$, comprising reacting one equivalent of 1,1,5-trichloro-3,3-dimethyl-1-pentene of the formula



with 2 to 4 equivalents of a phenol of the formula



at a temperature between about 100° and 250° C. in the presence of 2 to 4 equivalents of a base in a diluent, to produce a compound of the formula



and subjecting such reaction product to acid hydrolysis with the aid of a mineral acid at a temperature between about 20° and 150° C.

4,495,371

PROCESS FOR ISOMERIZING STYRENE OXIDE OR HOMOLOGUES TO β-PHENYLALDEHYDES

Carlo Neri, and Franco Buonomo, both of S. Donato Milanese, Italy, assignors to ANIC S.p.A., Palermo, Italy

Filed Jul. 14, 1983, Ser. No. 513,800
Claims priority, application Italy, Jul. 28, 1982, 22606 A/82
Int. Cl.³ C07C *45/58*
U.S. Cl. 568—427 7 Claims

1. A process for the isomerisation of styrene oxide or homologs thereof to the corresponding β-phenylaldehydes comprising conducting the isomerisation reaction in the presence of a catalyst composed of synthetic zeolites containing titanium, said zeolites being of the general formula:

$$xTiO_2 \cdot (1-x)SiO_2$$

where x is between 0.0001 and 0.04, and optionally in the presence of one or more solvents.

4,495,372

PREPARATION OF MONO-NITRO AROMATIC COMPOUNDS

Joseph A. Feiccabrino, Naugatuck, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed Nov. 5, 1982, Ser. No. 403,450
Int. Cl.³ C07C *79/10*
U.S. Cl. 568—929 5 Claims

1. A process for the preparation of mono-nitro polynuclear aromatic compounds comprising reacting a polynuclear aromatic compound with nitric acid in the absence of sulphur acid and in the absence of a solvent wherein the molar ratio of nitric acid to said aromatic compound is from 0.75/1 to 2/1.

4,495,373

METHOD FOR PARTIAL NUCLEAR HYDROGENATION OF AROMATIC HYDROCARBON COMPOUNDS AND A HYDROGENATION CATALYST THEREFOR

Shuichi Niwa, Ibaraki; Juichi Imamura, Chofu; Fujio Mizukami, Ibaraki; Kazuo Shimizu, Ibaraki, and Yoshio Orito, Ibaraki, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,565
Int. Cl.³ C07C *5/02, 5/11*
U.S. Cl. 585—269 17 Claims

1. A method for the preparation of a partially nuclear-hydrogenated product of an aromatic hydrocarbon compound which comprises reacting the aromatic hydrocarbon compound in the liquid phase admixed with water with hydrogen in the presence of a ruthenium-containing solid catalyst with silica, alumina or silica-alumina gel as the carrier, said ruthenium-containing solid catalyst being produced by subjecting a silicon alkoxide, aluminum alkoxide or a mixture thereof to hydrolysis and gelation in the presence of a ruthenium compound to form a gel of silica, alumina or silica-alumina as the carrier uniformly impregnated with ruthenium followed by drying.

4,495,374

METHANE CONVERSION

C. A. Jones, Newtown Square, and John A. Sofranko, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 12, 1983, Ser. No. 522,936
Int. Cl.³ C07C *2/00*
U.S. Cl. 585—500 26 Claims

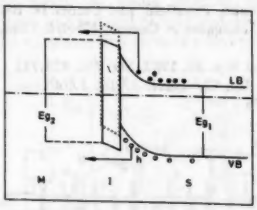
1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, said contacting being carried out in the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, Au and mixtures thereof, the improvement which comprises conducting the contacting in the presence of a promoting amount of at least one promoter selected from the group consisting of alkaline earth metals and compounds thereof.

4,495,375

MIS OR SIS SOLAR CELLS

Edmund Rickus, Oestrich-Winkel, and Karlheinz Jäger, Kronberg, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,718
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234678
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—255 14 Claims



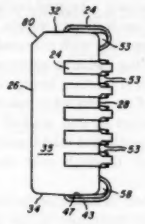
1. A solar cell with metal layer-quasi insulator-semiconductor (MIS) or semiconductor-quasi insulator-semiconductor (SIS) layer arrangement where the quasi insulating layer consists of a high-resistance semiconductor material, characterized in that the quasi insulating layer is doped with a material which makes it easier for the appropriate minority carrier to overcome the additional potential barrier caused by the quasi insulating layer.

4,495,376

CARRIER FOR INTEGRATED CIRCUIT

Angus W. Hightower, Richardson; Reginald W. Smith, Arlington, and John W. Orcutt, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 286,833, Jul. 27, 1981,. This application Sep. 15, 1983, Ser. No. 532,814
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 FP 3 Claims



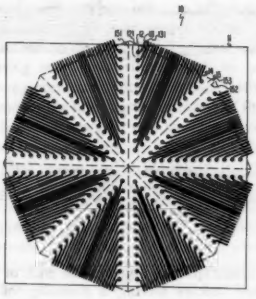
1. A carrier for an integrated circuit comprising:
(a) an enclosure having a top and a bottom parallel to said top, and two pairs of opposite parallel lateral sides connected together and extending from said top to said bottom, at least one lateral side having a plurality of protuberances extending beyond said bottom, said bottom having depressions therein, each depression located adjacent one of said protuberances; each protuberance having a rounded end extending away from said one lateral side toward said bottom and a slope extending from said rounded end into its adjacent depression, and
(b) a plurality of leads, each lead having one end disposed in said enclosure and extending through said one end lateral side over and substantially abutting said rounded end into said adjacent depression along and substantially abutting said slope for support to another end opposite to said one end of said lead.

4,495,377

SUBSTRATE WIRING PATTERNS FOR CONNECTING TO INTEGRATED-CIRCUIT CHIPS

Charles L. Johnson, Stewartville, and John M. Ryba, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,522
Int. Cl.³ H05K *1/02*
U.S. Cl. 174—68.5 16 Claims



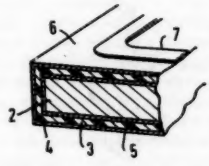
1. A substrate for mounting an integrated-circuit chip by means of linear signal conductors connecting to a plurality of input-output pads on said substrate, characterized in that said pads are disposed in single lines substantially following the radial edges of a plurality of wedge-shaped segments, said linear conductors crossing the outer edges of said segment, said segments together forming a polygonal area under said chip.

4,495,378

HEAT-REMOVING CIRCUIT BOARDS

Richard Dötzer, Nuremberg, and Ernst-Friedrich Lechner, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 303,102, Sep. 17, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,378
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035749
Int. Cl.³ H05K *1/05*
U.S. Cl. 174—68.5 6 Claims



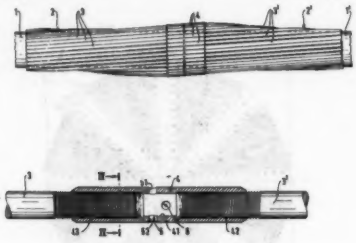
1. A heat removing circuit board comprising:
a flat core plate of a material selected from iron, titanium, conductive carbon and graphite;
on said core plate a thin first intermediate layer of a material selected from copper and silver;
a second intermediate layer on and in direct contact with said first intermediate layer, said second intermediate layer being of extremely pure aluminium;
an outer aluminum eloxal layer on and in direct contact with said second intermediate layer; and
conductor runs on said outer aluminum eloxal layer, said conductor runs being of a material selected from copper and nickel.

4,495,379

SPLICE FOR ELECTRIC CABLE ARMOR

Henri Thevenon, Lyons, France, assignor to Les Cables de Lyon, Clichy, France

Filed Dec. 5, 1983, Ser. No. 558,250
Claims priority, application France, Dec. 3, 1982, 82 20254
Int. Cl.³ H02G 15/08; F16G 11/12
U.S. Cl. 174—88 R 4 Claims



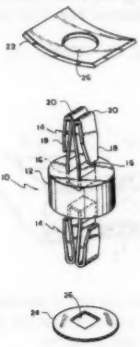
1. A cable splice splicing together the ends of two underwater cables, said cables having a plurality of armor wires wrapped helically thereabout at equal pitch, corresponding armor wires of respective cable ends having wire ends in axial alignment, the improvement wherein the ends of respective axially aligned armor wires having respectively right hand and left hand threads, and a plurality of sleeves, each sleeve having one end portion tapped with a left hand thread and an opposite end portion tapped with a right hand thread, and being threaded to the threaded ends of given axially aligned armor wires, whereby said sleeves enable the lay of the helically wrapped armor wires to be undisturbed by the splice effected thereby.

4,495,380

COMBINED METAL AND PLASTIC STANDOFF

William P. Ryan, Bethany; Richard A. Mason, Orange; Vincent A. Maida, Cheshire, and Timothy F. Donovan, Huntington, all of Conn., assignors to Mite Corporation, New Haven, Conn.

Filed Oct. 8, 1982, Ser. No. 433,426
Int. Cl.³ F16B 19/00; H05K 7/12, 7/14
U.S. Cl. 174—138 D 12 Claims



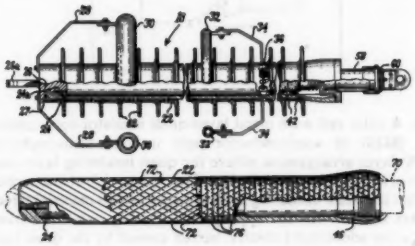
1. A combined metal and plastic standoff for supporting a circuit board in fixed spatial relationship with another element, comprising a rigid plastic body of appreciable length to produce the standoff effect, and a metal retaining member integrally mounted on said plastic body at an operative end thereof and having main, reverse bend and retaining portions, said main portion being in part fixedly disposed within said plastic body, said reverse bend portion being resilient and connecting said main and retaining portions, and said retaining portion being disposed outwardly of and longitudinally beyond said plastic body and comprising means for engagement with the circuit board or other element by an essentially longitudinal motion of the standoff along the axis of said body length to physically lock the circuit board or other element to said plastic body adjacent said operative end.

4,495,381

DYNAMIC LOAD BEARING TRANSMISSION LINE SUPPORT MEMBER

John A. Timoshenko, Pittsfield, and Daniel D. Bergh, Lenox, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 30, 1982, Ser. No. 429,712
Int. Cl.³ H01B 17/02, 17/46
U.S. Cl. 174—178 7 Claims



1. A load bearing member having application in an aerial transmission line supporting insulator comprising:

A. an elongated tube formed of multiple convolutions of a continuous band of plural glass fiber strands and a resin bonding agent, said fiber band being wound in alternating oppositely directed helical winding patterns and an essentially circumferential winding pattern;

B. a metallic insert disposed within each open end of said tube, said inserts having uneven exterior surfaces over which said glass fiber convolutions extend to captivate said inserts within the tube ends in interference fit fashion, each of said inserts having a tapped central bore, and

C. a metal end fitting in each of said inserts, each end fitting comprising a central portion with external threads thereon and a shoulder extending radially outward from said central portion, said central portion being threaded into the tapped central bore of its associated insert and having its shoulder abutting against an end wall of said tube to enable compressive forces on said load bearing member to be effectively transmitted through said shoulders to said tube,

D. said central bore of one of said inserts having a diameter at least as great as the maximum inside diameter of said tube so that the mandrel on which said tube is wound can be readily removed from said tube through said bore after winding, thus leaving a space within the tube for the subsequent introduction of elements to be housed within said space.

4,495,382

TELEPHONE REGULATOR CIRCUITRY

Donald L. Smith, and David B. Jones, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

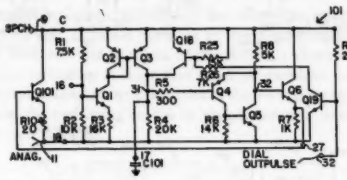
Filed Apr. 23, 1982, Ser. No. 371,328
Int. Cl.³ H04M 1/76
U.S. Cl. 179—81 R 9 Claims

1. A regulator circuit for use in a telephone set having a speech lead and a ground lead which together form a telephone line to generate, in response to the telephone DC line

current, a DC voltage sufficient to operate said telephone set, said regulator circuit comprising:

a voltage divider means connected across said speech lead and said ground lead, said voltage divider means having an output node which provides an output voltage proportional to the voltage across said telephone line;

a first amplifying means having an input node coupled to said output node of said voltage divider means for providing a first output signal when said voltage across said telephone line exceeds a first predetermined voltage, said first amplifying means shunting current between said speech lead and said ground lead when said voltage across said telephone line exceeds a first predetermined voltage;



a second amplifying means responsive to said first output signal for providing a second output signal when said voltage across said telephone line exceeds a second predetermined voltage greater than said first predetermined voltage; and

a current shunting means coupled across said telephone line which is responsive to said second output signal for maintaining the ratio of said telephone line voltage and said telephone DC line current within a predetermined range of magnitudes over a predetermined range of said telephone line voltage.

4,495,383

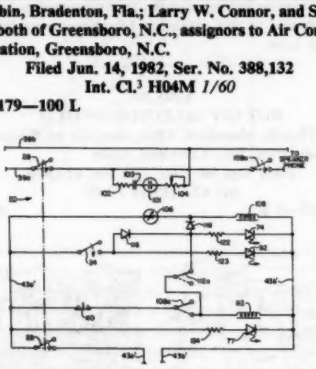
HANDS-FREE TELEPHONE-SPEAKER INTERFACER

David Lubin, Bradenton, Fla.; Larry W. Connor, and Samuel W. Glass, both of Greensboro, N.C., assignors to Air Conditioning Corporation, Greensboro, N.C.

Filed Jun. 14, 1982, Ser. No. 388,132

Int. Cl.³ H04M *1/60*

U.S. Cl. 179—100 L **5 Claims**



1. An interfacing apparatus for electronically interfacing a two-way speaker device with a telephone network having telephone lines, including a source of power for said interfacing apparatus and mode selective switch means for selectively connecting, when actuated, said interfacing apparatus with said telephone network to permit either conventional telephone answering or hands-free automatic answering by the user, said electronic interfacing apparatus comprising:

an answering switch in circuit with said telephone lines which, when actuated by said interfacing apparatus, connects said telephone lines to said two-way speaker device to receive said incoming call;

coupling means for automatically coupling said telephone network to said speaker device in response to ringing signals on said telephone lines to receive incoming telephone calls on said speaker device, when said mode selective switch means is actuated, said coupling means including an electronic optocoupler having its input connected to a telephone line for receiving a signal indicative of an incoming call, and providing an output signal indicative of said incoming call, said output signal causing said telephone line to be connected to said speaker device by actuating said answering switch to permit hands-free two-way communication by a user with a caller;

timing means for limiting the duration of the coupling of said telephone network to said speaker device to a predetermined time, said timing means including an integrated electrical timing circuit having its input in circuit with a charging capacitor and the output of said coupling means, said timing circuit being responsive to a predetermined voltage level on said charging capacitor to connect said telephone line to said speaker device, wherein said charging capacitor is in circuit with said source of power and is charged thereby, said coupling means cyclically causing the discharge of said charging capacitor, in response to a ringing signal indicative of the presence of an incoming call, to a sufficiently low level of charge on said capacitor causing said timing circuit to be actuated to connect said incoming call to said speaker device;

resetting means including hang-up switch means for shortening the duration of the coupling of said telephone network to said speaker device by said actuation of said hang-up switch means; and

extending means for bypassing said timing means to extend the duration of coupling when said extending means is actuated while said mode selective switch means is actuated.

4. An electronic apparatus for interfacing a telephone network having at least a pair of telephone lines with a two-way speakerphone comprising:

switching means for optically coupling said speakerphone through an automatic answering device, said answering device comprising:

blocking means for blocking DC components of a predetermined polarity of signals on said telephone lines;

an electronic optocoupler for coupling said telephone ringing signals to ground for discharging a charging capacitor at a predetermined signal level, said optocoupler having its input connected to a telephone line for receiving a signal indicative of an incoming call and providing an output signal indicative thereof, said optocoupler cyclically discharging said charging capacitor in response to said output signal of said optocoupler; and

means responsive to the predetermined signal level in said charging capacitor for connecting said speakerphone to said telephone lines automatically in a hands-free manner in response to said ringing signal.

4,495,384

REAL TIME COCHLEAR IMPLANT PROCESSOR

Brian L. Scott, Denton, and Wayne E. Kirkwood, Dallas, both of Tex., assignors to Scott Instruments Corporation, Denton, Tex.

Filed Aug. 23, 1982, Ser. No. 410,628

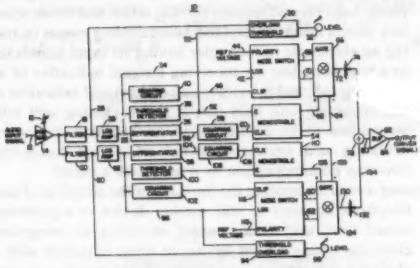
Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 FD **34 Claims**

1. Apparatus for generating a driver signal for an auditory implant electrode, comprising,

means for receiving an audio input signal,

means for detecting zero slope points of said audio input signal, and



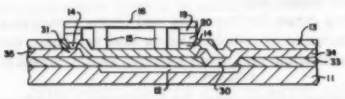
means for generating said driver signal having a pulse following the detection of each of said zero slope points of said audio input signal.

4,495,385

ACOUSTIC MICROPHONE

Jon A. Roberts, Minnetonka, and Thomas E. Hendrickson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 2, 1982, Ser. No. 446,290
Int. Cl.³ H04R *23/02*
U.S. Cl. 179—111 R **13 Claims**



1. A capacitive acoustic transducer comprising:
a first field plate mounted to a semiconductor substrate structure;
a second field plate made of metal, having first and second oppositely and substantially exposed surfaces; and,
mounting means for mounting said second field plate to said semiconductor substrate structure so that said first and second field plates form an acoustically responsive capacitor, said first exposed surface of said second field plate substantially facing said first field plate, said mounting means allowing said second field plate to respond to acoustic energy for altering the capacitance between said first and second field plates, said mounting means including first and second contact means for respective connection to said first and second field plates.

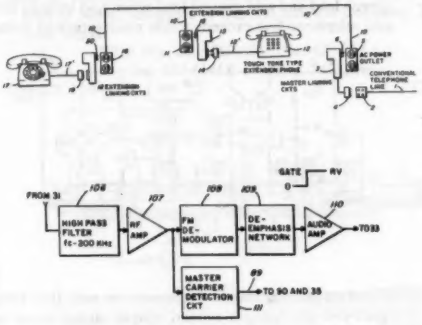
4,495,386

TELEPHONE EXTENSION SYSTEM UTILIZING POWER LINE CARRIER SIGNALS

William M. Brown, Acton, and Robert T. Dunn, Bedford, both of Mass., assignors to Astech, Inc., Bedford, Mass.

Continuation of Ser. No. 363,063, Mar. 29, 1982, Pat. No. 4,479,033. This application Nov. 7, 1983, Ser. No. 549,598
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2.51 **4 Claims**

1. A method of electrically coupling telephone signals on a telephone line to a conventional extension telephone having four or less wires, three of which are the tip, ring, or ground wires utilizing available electrical power lines having power outlets along the power lines comprising the steps of:
(a) coupling the tip and ring wires from the telephone line to a master linking circuit;
(b) coupling the master linking circuit to a first power line outlet;
(c) coupling an extension linking circuit to a second power line outlet;
(d) coupling a conventional extension telephone having tip and ring lines to the extension linking circuit;
(e) said master linking circuits performing the following steps:
(i) coupling telephone signals on the tip line to a transmitter for transmission in a first direction over said power line to said extension linking circuits;



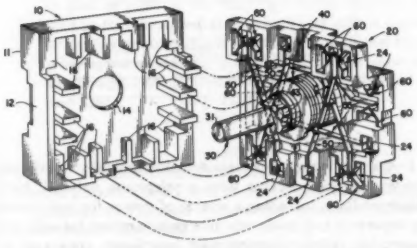
(ii) receiving signals in a receiver from the extension linking circuits for transmission in a second direction to the telephone line;
(f) said extension linking circuits performing the following steps:
(i) coupling telephone signals on the tip line of the extension telephone to a transmitter for transmission in said second direction over said power line to said receiver in said master linking circuits;
(ii) receiving signals in a receiver from the transmitter in the master linking circuits for transmission in said first direction to the extension telephone over the tip and ring lines.

4,495,387

ROTARY SELECTOR SWITCH

Roger L. Thrush, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 30, 1982, Ser. No. 430,806
Int. Cl.³ H01H *19/00*
U.S. Cl. 200—6 B **14 Claims**



1. A rotary selector switch comprising:
a rotatable shaft;
at least one cam member fixed to and carried on the shaft;
a switching means actuated by the cam member upon rotation of the shaft, the switching means including a plurality

of fixed elements each having a terminal portion and an adjacent contact portion, and a plurality of elongated movable elements each having a terminal end portion and a contact end portion, the said end portion being located on opposite sides of said shaft and being interconnected by an intermediate cam follower portion engageable with and driven by the cam member, rotation of the cam member causing said contact portions of the fixed elements and said contact end portions of the movable elements to engage and disengage from each other at one or more predetermined rotational positions of the shaft, said terminal portions and said terminal end portions being circumferentially distributed about the axis of rotation of the shaft; and

a casing rotationally supporting the shaft, the casing supporting said terminal portions of the fixed elements and said terminal end portions of the movable elements, said casing including at least two separate members between which are sandwiched portions of the switching means to retain the switching means in proper position relative to the cam member.

4,495,388

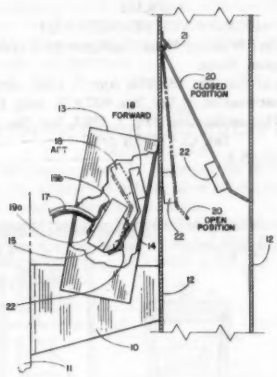
BIN LEVEL DETECTOR AND FILLING SWITCH

David A. Yoder, 30 Cedar Park Blvd., SW., Pataskala, Ohio 43062

Continuation of Ser. No. 503,587, Jun. 13, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 624,272

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—61.21 **6 Claims**



1. A bin level detector and control device comprising:

(a) a vertical tube mounted within a bin;

(b) a movable plate with an upper end and a lower end, said upper end mounted with a hinge inside the vertical tube within said bin, said plate having an open position and a closed position extending into said tube into close proximity to all the surrounding interior tube walls and holding an attached first magnet at said lower end of said plate;

(c) a second magnet with its like pole opposite to and biased with said first magnet and mounted to a movable support means for moving said second magnet towards said first magnet to urge said plate into said closed position, said first magnet and said second magnet being separated by a solid sheet material; and

(d) a control means linked to said second magnet for actuation by the increased force applied to said second magnet by movement of said plate to said open position by a material flowing into said tube.

4,495,389

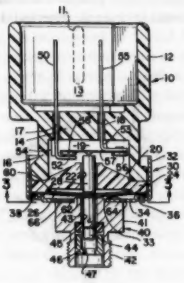
PRESSURE SWITCH

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jun. 11, 1982, Ser. No. 387,287

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—83 P **7 Claims**



1. A fluid pressure monitoring snap disc switch comprising:

a casing;

a switch means mounted on the casing and including a fixed contact and a movable contact engageable with the fixed contact;

a snap disc supported at its periphery by the casing;

a movable motion transfer element, slidably supported by the casing for reciprocating movement, and extending between the central portion of one side of the disc and the movable contact, snap movements of the central portion of the disc causing concurrent movements of the movable contact via the motion transfer element, the disc being calibrated to snap from a stable state upon application of a relatively low force;

a pistonlike plunger slidably supported by the casing for linear reciprocating movement on its longitudinal axis, one end of the plunger engaging the central portion of the other side of the disc, the other end of the plunger being exposable to a highly pressurized fluid, the effective cross-sectional area of the exposed end of the plunger being minimized to provide, in response to relatively high fluid pressure, the required low operating force directly to the snap disc via the plunger; and

seal means mounted on the casing and slidably engaging the plunger to preclude the application of fluid-pressure-generated forces to the disc by means other than the plunger, the disc being a non-bistable snap disc having a stable state and a non-stable state, movement of the plunger toward the disc applying a force to the disc to snap it from its stable state to its non-stable state, a predetermined decrease in the applied force allowing the disc to automatically reset from its non-stable state to its stable state, said resetting disc being the sole means for moving the piston against the high fluid pressure-generated force acting on the exposed end of the piston.

4,495,390

DISCONNECT SWITCH

P. H. Leppers, Maastricht, Netherlands, and Walter Schnoor, Essen, Fed. Rep. of Germany, assignors to Ruhrtal Elektrizitätsgesellschaft Hartig GmbH & Co., Essen, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,583

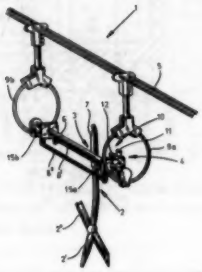
Int. Cl.³ H01H *9/40*

U.S. Cl. 200—145 **17 Claims**

1. In an electrical switch comprising relatively displaceable first and second metallic terminal members engaging each

other in a closure position for connecting a power line to a load circuit,

the combination therewith of a metallic guard element yieldably interposed between said first and second terminal members for conductive engagement, prior to engagement of said first terminal member, by said second terminal member upon relative motion of said terminal members from a disconnect position into said closure position, and circuit-breaker means inserted between said guard



element and said first terminal member for establishing conductive contact therebetween in response to an initial displacement of said guard element by said second terminal member prior to engageent of the latter with said first terminal member, said circuit-breaker means comprising two coacting conductors separating upon reverse motion of said terminal members into said disconnect position after disengagement of said terminal members from each other but before loss of contact between said guard element and said second terminal member.

4,495,391

ALTERNATE ON-OFF SWITCH MECHANISM

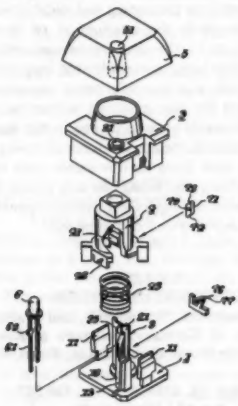
Zenichi Kitao, Nagaokakyo, and Haruyuki Koizumi, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 29, 1982, Ser. No. 454,270

Claims priority, application Japan, Dec. 29, 1981, 56/196815[U]; Jan. 13, 1982, 57/4382

Int. Cl.³ H01H *3/12, 13/56*

U.S. Cl. 200—153 J **1 Claim**



1. An alternate on-off switch mechanism comprising

a plunger member supported for linear movement,

a rotary cam rotatably supported by the plunger member,

a spring member for biasing said plunger member toward an original position of the plunger member,

a first stationary cam which is adapted to be engaged with said rotary cam so as to rotate said rotary cam by a predetermined angle, as said plunger member is pushed to a first position against the spring member,

a second stationary cam which is engaged with said rotary cam so as to lock the plunger member in a second position as the plunger member supporting said rotary cam at said predetermined angle returns from said first position

wherein said plunger member when locked in the second position is pushed again, said rotary cam is further rotated by said first stationary cam so as to be disengaged from said second stationary cam when said plunger member returns to said second position,

a base member and a cover mounted on the base member so as to enclose said plunger member, said rotary cam, said first and second stationary cams, and said spring member, so that said switch mechanism is protected against entry of foreign matter,

and

wherein said first stationary member is mounted on said base member and said second stationary cam is formed on an inner wall surface of said cover.

4,495,392

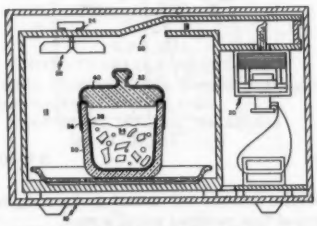
MICROWAVE SIMMER POT

Palmer P. Derby, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 138,070, Apr. 7, 1980, abandoned, which is a continuation of Ser. No. 937,671, Aug. 18, 1978, abandoned. This application Jan. 7, 1982, Ser. No. 337,785

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **1 Claim**



1. A cooking utensil for heating food with microwave energy, comprising:

a microwave transparent container for holding food, said container having thick, low thermal conductivity walls;

a first microwave and thermal radiation reflective layer covering a portion of the outer surface of said container;

a second microwave and thermal radiation reflective layer covering a portion of the inner surface of said container, said first and second layers partially overlapping;

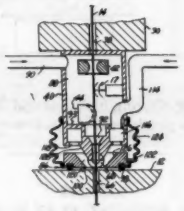
a lid removably positioned over said container, said lid having low thermal conductivity; and

said first and second layers being spaced by the thickness of said walls of said container to provide a path through said microwave transparent walls in the region of said overlap for microwave energy to enter the interior of said container to heat said food.

4,495,393
FLUID JETSTREAM THREADING MECHANISM AND METHOD FOR TRAVELLING WIRE EDM APPARATUS

Johan Janicke, La Roche-sur-Foron, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Dec. 21, 1981, Ser. No. 332,978
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 M **8 Claims**

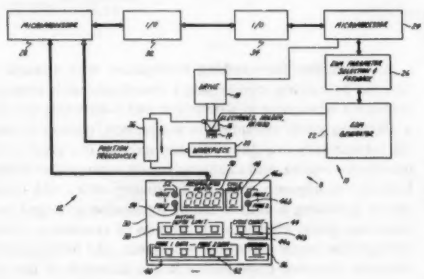


1. A method for threading the end of the electrode wire of a travelling wire EDM apparatus through an aperture in a workpiece, said method comprising placing an enclosure surrounding said end of said wire with an open end of said enclosure surrounding said aperture and in engagement with a surface of said workpiece such as to form a substantially leakproof junction between the open end of said enclosure and said workpiece surface, introducing said end of said wire in said enclosure such that said end of said wire is disposed proximate the inlet of said aperture, introducing a pressurized fluid in said enclosure for causing a high velocity stream of said fluid radially converging towards the inlet of said aperture, feeding the end of said wire towards the inlet of said aperture in said radially converting fluid flow, and pushing said end of said wire through said aperture.

4,495,394
ELECTRONIC DEPTH CONTROLLER FOR EDM APPARATUS

John R. McGregor; Gary F. Rupert, both of Ann Arbor, and Thomas M. Kennedy, Chelsea, all of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 346,689, Feb. 8, 1982, abandoned. This application Jun. 5, 1984, Ser. No. 617,149
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C **18 Claims**

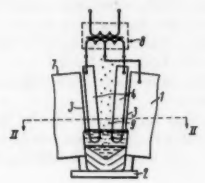


1. In EDM apparatus for machining at least one hole in a workpiece via at least one electrode mounted on a holder, said EDM apparatus comprising means for advancing and retracting said holder and at least one electrode in unison toward and away from the workpiece, means for refeeding the at least one electrode on the holder, a main control system for controlling the advance and retraction of said holder and at least one electrode relative to the workpiece and for controlling machining operations, and a depth control system operatively associated with said main control system, said depth control system comprising sensor means providing a signal referenced to a reference datum and indicative of relative position of the holder to the workpiece in the direction of advancement and retraction, the improvement in said depth control system which comprises input means for presetting an initial amount of travel for said holder in the direction of advancement at the beginning of a machining operation, said input means including means for presetting an increment of travel for said holder in the direction of advancement subsequent to the initial amount of travel in the direction of advancement, a data register for depth limit data, means for comparing the data contents of said data register with said sensor means signal, and operating means comprising means for loading said data register with the initial amount of travel preset by said input means and for causing the holder to advance said initial amount of travel at the beginning of a machining operation, means operable upon completion of said initial amount of advance to execute a sub-cycle, said last-named means comprising means for causing a refeeding of the at least one electrode, means for updating the data contents of said data register by the increment of travel set by said input means and for thereafter causing the holder and the refed at least one electrode to advance to the updated depth limit, and means for causing said sub-cycle to be repeatedly executed a given number of times.

4,495,395
METHOD FOR ELECTROSLAG WELDING WITH CONSUMABLE PLATE ELECTRODES

Boris I. Medovar; Vladimir P. Andreev; Vladimir V. Kozik; Nikolai T. Shevchenko, all of Kiev; Dmitry U. Spisarenko, Kievskaya; Vladimir P. Malevanny, Kiev; Vladimir F. Karpov, Zhdanov Donetskoi; Viktor V. Chernykh, Moscow; Anatoly D. Chepurnoi, Zhdanov Donetskoi; Evgeny A. Matsegora, Kramatorsk Donetskoi, and Lev A. Shuruev, Kiev, all of U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O.-Patona, Kiev, U.S.S.R.

Filed Sep. 20, 1982, Ser. No. 419,918
Int. Cl.³ B23K *25/00*
U.S. Cl. 219—73.1 **3 Claims**



1. A method for electroslag welding of workpieces in a welding gap, said workpieces having end faces and side surfaces, and said workpieces being welded with adding material and consumable plate electrodes, said electrodes having first faces and second faces, said method comprising:

arranging the end faces of the workpieces that are to be welded together at a predetermined angle of divergence to form the welding gap;

introducing the adding material and the electrodes into the welding gap;

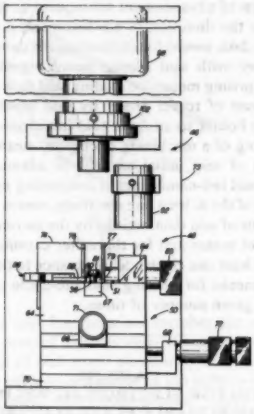
positioning the electrodes in the welding gap in pairs, one electrode of a pair opposite the other, at a divergent angle equal to the angle of divergence of the end faces to be welded together; and

positioning the first faces of the electrodes parallel to the end faces of the electrodes to be welded together and the second faces of the electrodes extending beyond the side surfaces of the workpieces.

4,495,396
ALIGNING A WORKPIECE TO A BODY

Charles R. Fegley, Laureldale, and Lorenz Regneth, Wyomissing, both of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,230
Int. Cl.³ B23K *1/12*
U.S. Cl. 219—85 G **8 Claims**



1. Apparatus for aligning a workpiece to a bore in a body, comprising:

means for providing radiation directed to a first end of the bore such that at least some portion of such radiation is redirected sufficiently to pass longitudinally along the surfaces of the bore thereby projecting an image of said bore from a second end thereof;

means for sensing said projected image of said bore;

means for manipulating the workpiece about the first end of the bore such that at least a target portion of said workpiece reflects the radiation sufficiently to cast an image of the target through the bore and through the image of the bore onto the sensing means, such manipulation continuing until a desired alignment of the workpiece with respect to the bore is achieved.

4. Apparatus as in claim 1 wherein the manipulating means further comprises:

heating means for supporting the workpiece during said manipulating such that said workpiece is aligned for a time sufficient for heating and bonding the workpiece to the body.

4,495,397
PROJECTION FOR RESISTANCE WELDING OF SOFT METALS

Paul Opprecht, Herrenbergstr. 10, 8962 Bergdietikon, and Jürg Opprecht, Widen, both of Switzerland, assignors to Paul Opprecht, Bergdietikon, Switzerland

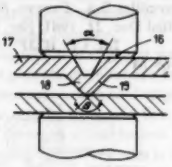
Continuation-in-part of Ser. No. 227,711, Jan. 23, 1981, abandoned. This application Oct. 13, 1981, Ser. No. 310,511
Claims priority, application Switzerland, Feb. 11, 1980, 1121/80; Nov. 26, 1980, 8739/80; Sep. 15, 1981, 5948/81
Int. Cl.³ B23K *11/14*
U.S. Cl. 219—93 **14 Claims**

1. An electrical resistance welding projection at workpieces, such as sheets and thin-wall parts essentially consisting of a soft metal such as aluminum or aluminum alloy, wherein:

said projection has flanks;

said flanks of said projections internally enclosing an angle in the range of about 40° to 75° and externally an angle in the range of about 40° to 100°; and

the strength of the material of the projection at the region of the projection flanks being greater by about 50% than the

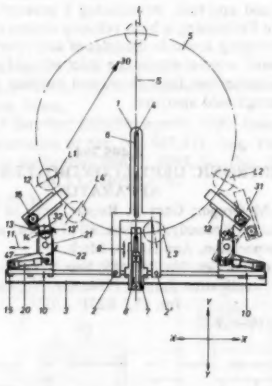


strength of neighboring base material of the workpiece at which there is present the projection.

4,495,398
MACHINE FOR WORKING FLAT WORKPIECES BY CUTTING

Walter Bredow, and Gerhard Otto, both of Alfeld, Fed. Rep. of Germany, assignors to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,316
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211224
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LG **12 Claims**

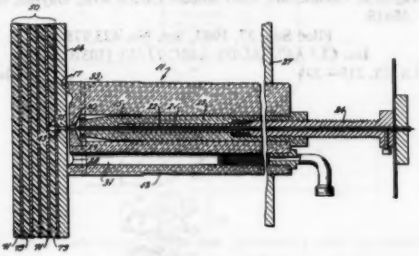


1. A machine for working workpieces with a round outer contour by cutting, comprising a coordinate table arranged to displace a workpiece in x-direction and y-direction and having a clamping guide extending in x-direction; cutting means acting substantially in z-directions and moving in a predetermined movement region; and clamping means arranged to releasably hold the workpiece on said coordinate table, said clamping means including a central clamping device arranged on said clamping guide, aligned with the axis of symmetry extending through the center axis of the workpiece, and having clamping elements mounted displaceable in the direction of the axis of symmetry, said clamping means also including two lateral clamping devices displaceably arranged on said clamping guide, located at opposite sides of said central clamping device and each having clamping elements which are mounted pivotally about at least one pivot axis extending substantially normal to the workpiece plane and parallel to the z-axis so that said clamping elements can move from a releasing position in which the workpiece and the movement region of said cutting means are released to a clamping position in which they engage the workpiece and vice versa.

4,495,399
MICRO-ARC MILLING OF METALLIC AND NON-METALLIC SUBSTRATES

Gordon L. Cann, 17751-F Skypark East, Irvine, Calif. 92714

Continuation-in-part of Ser. No. 247,770, Mar. 26, 1981, Pat. No. 4,404,456. This application Mar. 4, 1982, Ser. No. 354,546
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PY 29 Claims



1. A method for milling materials from a work article in which the materials are removed by a micro-arc-heated gas plasma comprising:

(a) placing a cathode having a longitudinal axis in the proximity of the material to be milled;

(b) establishing an anode adjacent the cathode;

(c) providing an electric potential across the anode and cathode, said potential being sufficient to maintain an arc at less than 10 amperes;

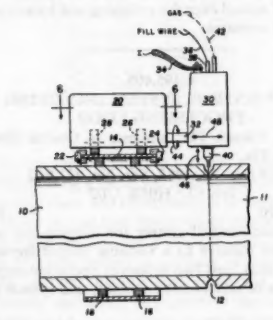
(d) directing a gaseous fluid within a substantially confined chamber in a controlled flow pattern substantially radially toward the material to be removed while maintaining said potential between the cathode and anode for a predetermined time period; and

(e) passing the gaseous fluid from said work article toward the cathode through a vortex flow to remove material from said proximity.

4,495,400
METHOD AND APPARATUS FOR POSITIONING A WELDING TORCH IN AUTOMATIC ELECTRIC WELDING

Floyd M. Thompson, Houston, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed Apr. 26, 1982, Ser. No. 371,737
Int. Cl.³ B23K 9/12
U.S. Cl. 219—125.12 10 Claims



1. In automatic arc welding where a weld torch follows lateral traverses across a groove during travel along the length of said groove and the weld torch provides an arc current, the combination comprising:

(a) means to produce a control signal representative of the difference between the arc current near the end of each of said traverses and the base arc current at the center of said traverse;

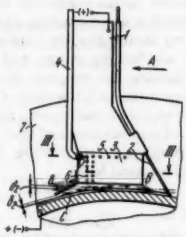
(b) means to produce the integral of said control signal; and

(c) means to arrest travel of said torch on each said traverse each time the integral of control signal reaches a reference value.

4,495,401
TORCH FOR GAS-SHIELD ARC WELDING IN DEEP NARROW GROOVE

Viktor V. Sidorov; Efim Y. Tselniker; Evgeny P. Sidorov; Leonid V. Sukhov; Vyacheslav F. Gorb, all of Moscow, and Gennady M. Bairakovsky, Kolpino Leningradskoi, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie Po Tekhnologii Mashinostroenia (NPO Tsniitmash), Moscow, U.S.S.R.

PCT No. PCT/SU80/00195, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01840, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 28, 1980, Ser. No. 403,506
Int. Cl.³ B23K 9/16
U.S. Cl. 219—136 2 Claims



1. A torch for gas-shielded arc welding in a narrow deep groove, comprising a current contact torch bit; with an electrode and a nozzle for feeding the shielding gas to the welding zone, which communicates with a gas-feeding tube and is fitted with at least one row of horizontally arranged holes, characterized in that the nozzle is made as a closed chamber (3) which is wedge-shaped and whose sharp edge facing the electrode (2) is in one plane with the axis of the electrode (2), the side walls and bottom of the chamber (3) being provided with at least one additional row of holes (6) whose axes lie in one plane approximately perpendicular to the walls (7) of the groove; and a ledge (8) secured externally on a wall of the chamber (3) opposite the sharp edge thereof, the inclination angle of said ledge (8) being variable with respect to the bottom (9) of the chamber (3).

4,495,402
WARMER FOR TEMPERATURE CONDITIONING WET DRESSINGS AND OTHER ARTICLES

Thomas H. Burdick, Deerfield; Alfred Vasconcellos, Crystal Lake, and William G. Whitney, Evanston, all of Ill., assignors to W. G. Whitney Corporation, Glenview, Ill.

Filed Oct. 2, 1981, Ser. No. 307,954
Int. Cl.³ B65D 83/08; H05B 3/20
U.S. Cl. 219—214 14 Claims

1. A warmer for articles disposed in stacked relation comprising,

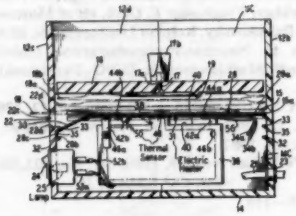
a container made of thermal and electrical insulating material and forming an inner compartment,

a thin aluminum plate in the range of from about 0.013 to 0.016 inches in thickness disposed horizontally in said inner compartment to partition the compartment into an upper combined storage and heating compartment for

receiving said articles in stacked relation to be warmed, and a lower mechanism compartment,

electrical heating means on the lower side of said thin aluminum plate to deliver thermal energy thereto,

said thin aluminum plate having a center aperture forming a thermal island in which is disposed in thermal isolation a first sensing means projecting into said combined heating and storage compartment for engaging a bottommost one of said articles in stacked relation in said combined heating and storage compartment for sensing the temperature of said bottommost article,



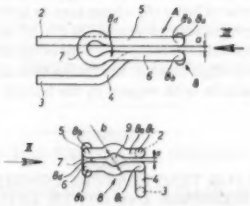
and circuit control means connected to said heating means including said first sensing means and further including a second sensing means directly responsive to the temperature of such said heating means, and including means for selectively limiting the thermal input delivered to the storage compartment as a function of the sensed temperature of said first and second sensing means for bringing the temperature of said bottommost article to a selected level and maintaining said temperature of said bottommost article at said selected level.

4,495,403

DIRECTLY-HEATED ELECTRICAL RESISTANCE UNSOLDERING TIP FOR SIMULTANEOUS LIQUEFYING AND REMOVING SOLDER FROM A JOINT

Toth Attila, Zechmeisterstrasse 15, A-4020 Linz, Austria

Filed Sep. 12, 1983, Ser. No. 531,426
Claims priority, application Austria, Sep. 13, 1982, 3425/82
Int. Cl.³ B23K *3/02*; H05B *3/02*
U.S. Cl. 219—233 **10 Claims**



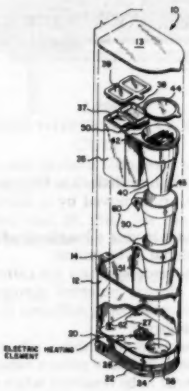
1. An unsoldering tip for an electrical apparatus for unsoldering of soldering joints and for removing solder, comprising an electrical conductor having ends designed to be connected to an electric voltage source and having such an electrical resistance that it becomes heated on current flow therethrough, said electrical conductor comprising two legs partially extending in parallel relation and being connected one with the other at one end and being adapted for being connected at their other ends to respective terminals of the electrical voltage source and said legs having at their parallelly extending area a small distance of between approximately 0.1 and 0.3 mm. therebetween and said legs comprising a bend where an enlarged open area is provided between said legs for receiving the soldering joint, the maximum spacing between said legs in said enlarged area being between approximately 0.8 and 1.2 mm.

4,495,404

SELF-CONTAINED COMPACT ELECTRIC BEVERAGE BREWING TRAVEL KIT

Wayne E. Carmichael, 7207 Robert Ulrich Ave., Dayton, Ohio 45415

Filed Sep. 27, 1982, Ser. No. 423,975
Int. Cl.³ A47J *31/00*; A45C *11/20*; H05B *3/00*
U.S. Cl. 219—281 **6 Claims**



3. A compact travel kit for making a beverage such as tea or coffee, and for containing cups and ingredients, comprising:

a container adapted to receive a quantity of water to be heated, said container being open at the top and having side walls, a bottom, a front wall having means thereon defining a pouring spout, and a back wall having means thereon defining a lifting handle,

heater means in said bottom for heating water in said container,

an insert removably receivable within said container through said open top,

means in said insert defining a plurality of upwardly opening storage compartments,

means on said insert defining a downwardly depending member adapted to be received in the uppermost one of a plurality of nested cups for retaining and locating the cups within said container.

4,495,405

AUTOMATIC CONTROL SYSTEM INCLUDING ERROR PROCESSING LOOP

John E. Foster, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sep. 23, 1982, Ser. No. 421,812
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—510 **19 Claims**

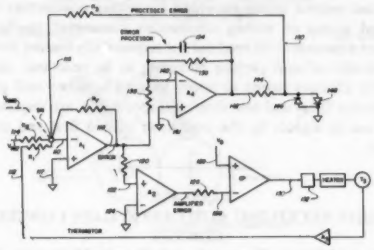
1. An automatic control system for varying the switching point of a device relative to a variable output signal, which device operates in at least two modes of operation respectively on opposite sides of said switching point, said system comprising:

A. means for generating said variable output signal in response to the operation of said device;

B. combination means for producing an error signal comprising the combination of a constant reference signal, a processed error signal that varies, and said variable output signal, said error signal varying in response to both said

processed error signal and said variable output signal relative to said constant reference signal;

C. control means for switching the mode of operation of said device in response to said error signal; and



D. error processing means for generating said processed error signal as a time-averaged function of said error signal.

4,495,406

HEATING SHEET

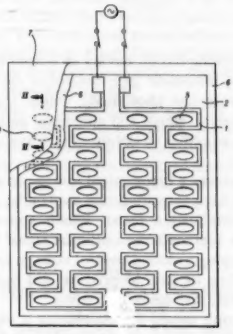
Yoshio Sakai, Ueda, and Takeshi Yamada, Saku, both of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,492

Claims priority, application Japan, Apr. 6, 1982, 57-49566[U]

Int. Cl.³ H05B 3/36

U.S. Cl. 219—528 **2 Claims**



1. A heating sheet comprising a heater element which is obtained by forming a metal foil heating circuit on one surface of a first plastic sheet and superposing a second plastic sheet of the same shape as said first plastic sheet thereover, and adhering said first and second plastic sheets together; through holes formed in a regular pattern in portions of said heater element other than portions having said metal foil heating circuit formed therein; and a pair of protective thermoplastic covers which clamp said heater element therebetween and which are bonded together at a periphery of said heating sheet and through said through holes; wherein those portions of said protective covers which correspond to said through holes are recessed and indented due to said through holes in said heater element, thereby distinguishing the locations of said through holes.

4,495,407

SYSTEM FOR FOCUSING AN OPTICAL HEAD ONTO A FLAT SURFACE

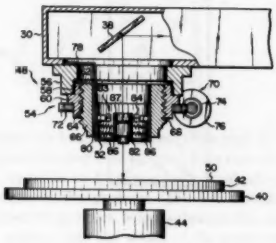
Hiroshi Kodama; Masaharu Sakamoto; Ken Ohshima; Shoji Yoshikawa; Kunio Yamamiya, and Kiichi Kato, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,613

Claims priority, application Japan, Mar. 31, 1981, 56-48005

Int. Cl.³ G01J 1/20

U.S. Cl. 250—201 **9 Claims**



1. A system for focusing an optical head onto a substantially flat surface of an object, comprising:

a unit for generating a laser beam;

an optical head for receiving the laser beam and for projecting said laser beam onto the surface of the object, said optical head including an objective lens having an optical axis and a focal point for converging the laser beam toward the focal point; and means for directing the laser beam reflected from the surface of the object in a predetermined direction;

first moving means coupled to the optical head for moving said optical head along the optical axis of the objective lens of said optical head;

second moving means coupled to the objective lens for moving the objective lens along the optical axis of the objective lens of said optical head;

means for detecting the reflected laser beam directed by said directing means and for generating a focusing signal having a level corresponding to the distance between the objective lens and the surface of the object;

first energizing means for selectively energizing said first moving means for moving said optical head in response to the level of the focusing signal; and

second energizing means for selectively energizing said second moving means for moving said objective lens in response to the level of the focusing signal;

only one of said first and second energizing means energizing its respective first and second moving means at any one time.

4,495,408

SUNLIGHT DIRECTION SENSOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,235

Claims priority, application Japan, May 9, 1981, 56-69781; Jun. 26, 1981, 56-99993; Feb. 5, 1982, 57-17237

Int. Cl.³ G01J 1/20; F24J 3/02

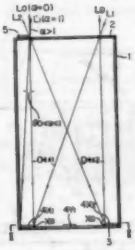
U.S. Cl. 250—203 R **8 Claims**

1. A sunlight direction sensor comprising a cylindrical body, a nontransparent flange disposed at an upper end of said cylindrical body and having an inner diameter smaller than an inner diameter of said cylindrical body, a first photosensor which is arranged on said nontransparent flange, and at least one pair of second and third photosensors which are symmetrically arranged at a lower end of said cylindrical body so that inner edges of said second and third photosensors correspond to an inner periphery of said flange, wherein a ratio α of a width of a luminous flux falling incident on said second or third photo-

sensor to an overall width thereof is given as follows, said width being measured from the inner edge of the corresponding sensor:

$$\alpha=(L_1-L_2)/(\lambda L_0-2L_2)$$

where L_0 (mV) is an output signal generated in response to a total amount of luminous flux incident on said first sensor, L_1



(mV) is an output signal generated in response to an amount of direct and indirect luminous flux incident on said second photosensor, L_2 (mV) is an output signal generated in response to an amount of indirect luminous flux incident on said third photosensor, and λ is the ratio of the output signal from said first photosensor to the output signal from said second photosensor when luminous flux is incident on the entire surfaces of said first photosensor and said second photosensor.

4,495,409

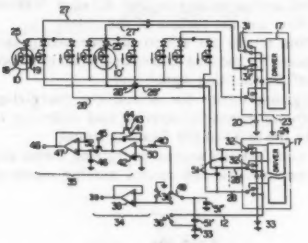
PHOTOSENSOR WITH DIODE ARRAY

Toru Baji, Kokubunji; Naohiko Koizumi, Mobara; Toshihisa Tsukada, Tokyo; Hideaki Yamamoto, Tokorozawa; Yasuharu Shimomoto, Tokyo, and Yasuo Tanaka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,669

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **8 Claims**



1. A photosensor comprising an array of a plurality of unit picture elements each of which is constituted by a serial connection of a photoconductor film and a diode, wherein said plurality of unit picture elements are grouped into at least two groups, the unit picture elements belonging to the respective groups being connected to a corresponding first group of wiring conductors provided in association with said groups, respectively, while the unit picture elements belonging to the different groups and located at the same positions in the different groups relative to one another are connected together to a respective second group of wiring conductors, including first means for applying a voltage to a selected wiring conductor of the first group of wiring conductors which selected wiring conductor is connected to a selected one of said at least two groups of picture elements which includes picture elements from which a signal is to be read out, said voltage serving for biasing forward the diodes of said picture elements to be read out, while no forward bias voltage is applied to other wiring conductors of the first group of wiring conductors connected to other groups of the unit picture elements which do not include the picture elements from which signals are to be read out; and second means provided for wiring conductors of the second group of wiring conductors connected to the unit picture elements to be read out for sequentially biasing forward the diodes of said picture elements to be read out, so that electric charges stored at nodes located between said photoconductor films and said diodes, respectively, are sequentially read out as signals by the operation of said first and second means.

4,495,410

LIGHT RECEIVING AUTOMATIC GAIN CONTROL CIRCUIT

Takatoshi Minami, Kawasaki, and Hiroshi Nishimoto, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

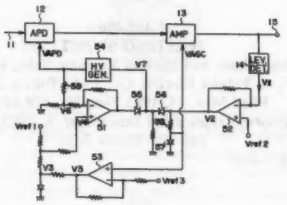
PCT No. PCT/JP81/00138, § 371 Date Feb. 5, 1982, § 102(e) Date Feb. 5, 1982, PCT Pub. No. WO82/00073, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 15, 1981, Ser. No. 349,090

Claims priority, application Japan, May 25, 1980, 55-85246

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 AG **12 Claims**



1. A light receiving circuit having an output that is kept at a constant level by automatic gain control of the multiplication factor of an avalanche photodiode which converts a light signal into an electric signal and automatic gain control of an amplifier which amplifies an output of said avalanche photodiode, comprising:

means for applying a first control voltage to said avalanche photodiode for controlling said avalanche photodiode to have a multiplication factor which approximates with straight-line segments the optimum signal-to-noise ratio, and for applying a second control voltage to said amplifier for controlling its gain to provide said output with said constant level, said means including

first comparing means for comparing a voltage proportional to said first control voltage and a signal corresponding to a first reference voltage,

second comparing means for comparing the output of said amplifier and a second reference voltage, the output of the second comparing means corresponding to said second control voltage provided to said amplifier

third comparing means for comparing a third reference voltage and said second control signal, the output of said third comparing means being coupled to said first reference voltage;

a high voltage generator circuit having an output connected to supply said first control signal to said avalanche photodiode, and

a switch device having as inputs the outputs of said first and second comparing means and providing an output as an input of said high voltage generator circuit.

4,495,411

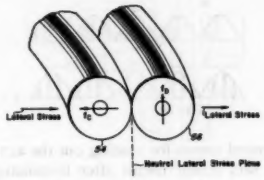
FIBER OPTIC SENSORS OPERATING AT DC

Scott C. Rashleigh, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1982, Ser. No. 437,098

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—227 **25 Claims**



1. A physical sensor for detecting a physical quantity varying at any rate below a maximum rate with minimal disturbance from environmentally induced perturbations, comprising:

a first highly birefringent optical fiber having orthogonal fast and slow axes, a first coherent light signal passing through said first fiber;

a second highly birefringent optical fiber having orthogonal fast and slow axes, a second coherent light signal passing through said second fiber, said first and second fibers being equally birefringent, said second fiber being positioned longitudinally adjacent to said first fiber, said fast axis of said first fiber being orthogonal to said fast axis of said second fiber;

coupling means mechanically coupled to said first and second fibers for asymmetrically altering the birefringence of said first and second fibers in response to said physical quantity and for rotating the states of polarization of said first and second light signals in the same direction in response to said physical quantity, said birefringence of said first and second fibers being symmetrically altered in response to environmental perturbations such that the states of polarization of said first and second light signals are rotated in opposite directions in response to said environmental perturbations; and

detection means for detecting the states of polarization of said first and second light signals, for combining said detected states of polarization altered due to said physical quantity, for cancelling said detected states of polarization altered due to said environmental perturbations, and for producing an output signal representative of said physical quantity.

4,495,412

DEVICE FOR THE OPTICAL SCANNING OF A DOCUMENT

Martinus L. G. Thoone; Giok D. Khoe, both of Eindhoven, Netherlands; Dieter Küppers, Aachen, Fed. Rep. of Germany, and Pol A. G. J. Gustin, Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

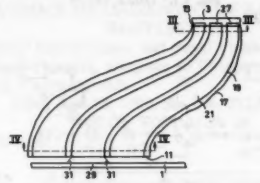
Filed Jul. 28, 1982, Ser. No. 402,509

Claims priority, application Netherlands, Jul. 30, 1981, 8103599

Int. Cl.³ G02B *5/14;* **G06K** *7/10*

U.S. Cl. 250—227 **4 Claims**

1. A device for the optical scanning of a document (1), comprising a transducer (3) which comprises a row of photoelectric elements, (27) and a coupling member (7) with an entrance (11) which is to be directed towards the document and an exit (13) which is optically connected to the transducer, said coupling member (7) being constructed as an integrated optical waveguide circuit comprising a glass substrate (17) in which there are formed optical conductors (21) which extend from the entrance to the exit and the ends of which are situated on a first line at the entrance and on a second line at the exit, said first line being substantially longer than the second line, the width of each optical conductor gradually decreasing from the entrance (11) of the coupling member towards the exit (13), characterized in that in the glass substrate (17) of the coupling



member (7) there are formed grooves (19) which are filled with a glass having a refractive index higher than that of the glass of the substrate, in order to form the light conductors (21) over the entire length of the grooves (19), the distance between every two adjacent grooves being substantially constant and substantially smaller than the width of the grooves.

4,495,413

PROCESS FOR CALIBRATING ION-CURRENT AMPLIFIERS IN MASS SPECTROMETERS AND MASS SPECTROMETER FOR CARRYING OUT THE PROCESS

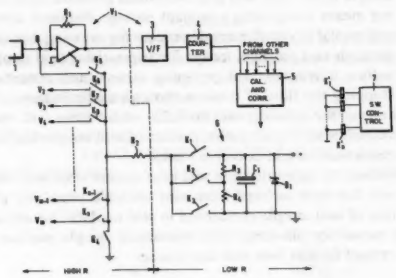
Heinz Lerche, Bremen; Horst Rache, Delmenhorst, and Reiner Wedde, Seebergen, all of Fed. Rep. of Germany, assignors to Finnigan Mat GmbH, Fed. Rep. of Germany

Filed Sep. 25, 1982, Ser. No. 425,314

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139975

Int. Cl.³ G01D *18/00;* **G12B** *13/00;* **B01D** *59/44*

U.S. Cl. 250—252.1 **11 Claims**

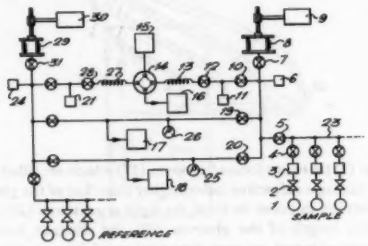


1. A process for calibrating ion-current amplifiers in mass spectrometers possessing a plurality of ion-targets, especially Faraday targets, the individual measuring channels being calibrated by means of known reference-values, the measurement-values, obtained in this process, being stored, and the stored measurement-values being inter-correlated in order to form correction-factors for the individual measuring channels, characterized by the following steps: supplying an electric current having a high degree of constancy, as a reference-value, to the individual measuring channels in chronological succession; designating one of said channels as a reference channel; obtaining measurement-values, as a result of said electrical current, from each channel; and inter-correlating said measurement-values by division of all measurement-values by the measurement-value of said reference channel, the quotient of said division being said correction-factors whereby amplifier gain error in each of said channels is corrected.

4,495,414
AUTOMATIC MASS SPECTROMETER INLET SYSTEM

Andrew Barrie, Knutsford, and Phillip A. Freedman, Northwich, both of England, assignors to V.G. Isogas Limited, England

Filed Nov. 30, 1982, Ser. No. 445,550
Claims priority, application United Kingdom, Nov. 30, 1981, 8136038
Int. Cl.³ H01J 49/04
U.S. Cl. 250—288 10 Claims



1. A mass spectrometer adapted for the accurate determination of the isotopic composition of an at least partially condensable gaseous sample, said mass spectrometer having an ion source and an inlet system comprising:

(a) means for allowing said sample to expand from a reservoir into said inlet system;

(b) means for determining the pressure of said sample in said inlet system;

(c) means for allowing said sample to expand further into said ion source when said pressure of said sample is greater than a predetermined pressure;

(d) a coolable vessel provided with cooling means for condensing substantially all of the condensable portion of said sample into said coolable vessel when said pressure of said sample is less than said predetermined pressure, said cooling means comprising a coolant passage disposed around said coolable vessel, pumping means for drawing a coolant through said passage, means for vapourising said coolant before it reaches said pumping means, and means for stopping the flow of coolant through said passage;

(e) means for isolating said coolable vessel from said reservoir after said condensable portion of said sample has been condensed in said coolable vessel;

(f) means for vapourising in said inlet system after said reservoir has been isolated from said coolable vessel the portion of said sample condensed in said coolable vessel; and

(g) means for allowing said vapourised sample portion to expand further into said ion source.

4,495,415
RADIATION SENSING SYSTEM

Takashi Kawabata, Kamakura, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

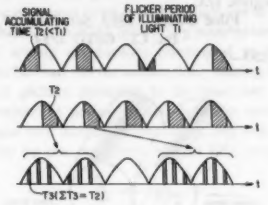
Filed Nov. 18, 1982, Ser. No. 442,783
Claims priority, application Japan, Nov. 24, 1981, 56-188189
Int. Cl.³ G01J 5/00
U.S. Cl. 250—336.1 34 Claims

1. A radiation sensing system including:

(A) signal accumulating type radiation sensor means having at least one radiation sensing element responsive to a radiation to produce an electrical signal;

(B) presetting means for presetting the signal accumulating time of said sensor means;

(C) first control means for dividing the signal accumulating time preset by said presetting means into a plurality of discontinuous time sections and causing said sensor means to accumulate the produced signal of said sensing element only during each of said time sections; and

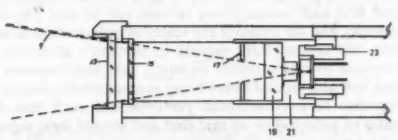


(D) second control means for reading out the accumulated signal from said sensor means after termination of the signal accumulation by said plurality of time sections.

4,495,416
REMOTE SENSING INSTRUMENT

Ross S. Mason, Upper Hutt, and Peter J. Ellis, Wainuiomata, both of New Zealand, assignors to New Zealand Government Property Corporation, New Zealand

Filed Sep. 2, 1982, Ser. No. 414,435
Claims priority, application New Zealand, Sep. 3, 1981, 198264
Int. Cl.³ G01J 1/00
U.S. Cl. 250—338 8 Claims



1. An instrument for the determination and recording of the intensity of radiation emitted or reflected by a target in one or more spectral bands within the visible and infra-red spectrum, including at least one measuring system wherein the instrument has a field of view collimated by an object aperture and a detector aperture, within the range 10 degrees to 30 degrees, with a penumbra lying between 0.2 degrees and 1 degree, surrounding the said field of view.

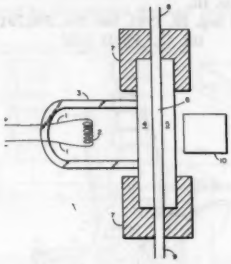
4,495,417
DEVICE FOR THE DETERMINATION OF THE SOOT CONTENT OF AN OIL SAMPLE

Lutz Hohensang, Hamburg, Fed. Rep. of Germany, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,787
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 8132595[U]
Int. Cl.³ G01J 1/00
U.S. Cl. 250—343 7 Claims

1. An apparatus for determining the soot content of an oil sample comprising a source of infrared radiation, an oil-sample receptacle of infrared permeable material and an infrared detector and a power source, said apparatus having one side or an

aperture in said side of the oil-sample receptacle form a part of the bulb of a small incandescent lamp containing said source of infrared radiation and having the infrared detector placed on the side opposite the oil-sample receptacle.



4,495,418

METHOD OF STANDARDIZING IR BREATH ALCOHOL DEVICE

Donald G. Hutson, El Cerrito, Calif., assignor to Cal Detect, Inc., Richmond, Calif.

Filed Feb. 15, 1983, Ser. No. 466,434
Int. Cl.³ G01F *15/14*; G01J *5/02*
U.S. Cl. 250—343 **4 Claims**

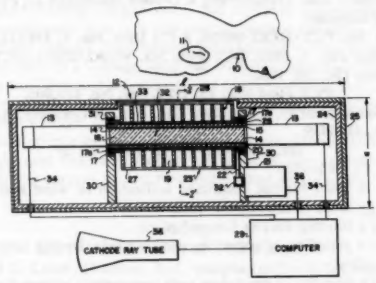
1. The method of standardizing, calibrating or testing apparatus utilizing an IR cell for determining quantitatively the content of alcohol in breath comprising passing a dry gas sample carrier containing a known amount of ethyl alcohol through an IR cell the walls exposed to said sample of which are, as to said alcohol, non-adsorbant.

4,495,419

RADIATION DETECTION DEVICE

Stewart J. Schmehl, 241 Midland Ave., Montclair, N.J. 07042

Filed Jun. 11, 1982, Ser. No. 387,422
Int. Cl.³ G01T *1/202*, *7/00*
U.S. Cl. 250—363 S **6 Claims**



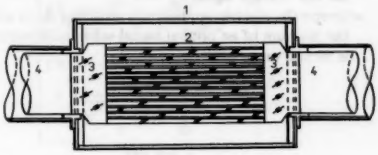
1. A hand-held detection device comprising a housing having a radiation permeable window located therein and a rotating cylindrical collimator mounted in said housing, said collimator comprising a tubular member comprised of a radiation permeable material and a plurality of equally spaced radial rows of channels formed by channel forming members mounted on said tubular member, said collimator surrounding a tubular scintillator.

4,495,420

MULTILAYER SCINTILLATION CHAMBER FOR THE SIMULTANEOUS MEASUREMENT OF RADIOACTIVE SAMPLES

Martin Chudy; Rudolf Janik, and Pavol Povinec, all of Bratislava, Czechoslovakia, assignors to Univerzita Komenskeho, Bratislava, Czechoslovakia

Filed Apr. 28, 1982, Ser. No. 372,526
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—367 **2 Claims**



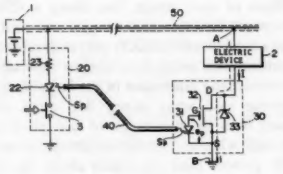
1. A multilayer scintillation chamber adapted for the simultaneous measurement of radionuclides emitting beta-radiation, comprising a light-tight casing, a plurality of layers of plastic scintillation plates disposed in spaced parallel relationship in said light-tight casing, and two photomultipliers, the ends of said plates being optically coupled through light guides to said photomultipliers, said chamber further comprising electronic circuits for selecting only those events in which output pulses from the two photomultipliers are in coincidence, and in which the amplitudes of said pulses correspond to the maximum energies of registered beta-particles of measured beta-radionuclides in said plastic scintillation plates.

4,495,421

OPTICAL POWER SUPPLY SWITCHING APPARATUS

Hiroshi Endo; Masazumi Sone; Iwao Imai, and Hideo Kasuya, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 29, 1982, Ser. No. 363,149
Claims priority, application Japan, Apr. 7, 1981, 56-51259
Int. Cl.³ G02B *27/00*; H01J *40/14*
U.S. Cl. 250—551 **9 Claims**



1. An optical power supply switching apparatus for connecting or disconnecting a power supply to or from at least one electric appliance, which comprises:

(a) a power supply line for connecting the power supply to the at least one electrical appliance, said power supply line comprising a low impedance coaxial cable;

(b) at least one manual switch;

(c) at least one light-emitting element connected in series with the power supply and said manual switch for emitting therefrom at least one optical signal S_p having a specific wavelength when said manual switch is closed;

(d) one optical fiber, one end of which is disposed near said light-emitting element in such a way that the optical signal

S_p emitted from said light-emitting element can be introduced thereinto;

(e) at least one photoelectric transducer disposed near the other end of said optical fiber in such a way that said transducer can generate a voltage signal e_p when the optical signal S_p is applied thereto through said optical fiber; and

(f) at least one non-electromechanical switching element responsive to the signal e_p from said photoelectric transducer for connecting the power supply to the electric appliance via said power supply line when said photoelectric transducer generates the voltage signal e_p and for disconnecting the power supply from the electric appliance when said photoelectric transducer does not generate the voltage signal e_p;

whereby the electric appliance is switched on or off through the medium of an optical signal when said manual switch is turned on or off.

4,495,422

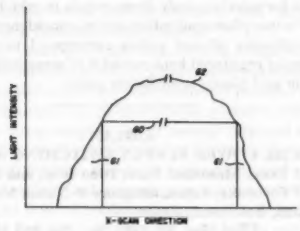
ILLUMINATION CONTROL FOR RASTER INPUT SCANNERS

Douglas G. Wiggins, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,158

Int. Cl.³ H04N *1/10*

U.S. Cl. 250—578 **3 Claims**



2. In combination:

a linear array for viewing images line by line, said array having a plurality of photosites which view successive portions of each image line along a scan axis, relative movement between said images and said array along a cross scan axis substantially perpendicular to said scan axis permitting said array photosites to view said image lines in succession; the dimension of the individual photosites that comprise said array along said cross scan axis being greater than the dimension of said photosites along said scan axis whereby resolution along the scan axis is ordinarily greater than resolution along the cross scan axis; and

means for reducing the effective size of said photosites to enhance resolution of said array along said cross scan axis comprising a mask integral with said array and overlaying said array photosites, said mask having an elongated continuous aperture therethrough paralleling the scan axis and forming a viewing window through which said array photosites view said image lines, the dimension of said aperture along said cross scan axis uniformly increasing from a minimum at substantially said array center to a maximum at said array ends, said aperture maximum dimension being less than the dimension of said array photosites along said scan axis whereby to convert the effective size of said photosites from oversquare to undersquare.

4,495,423

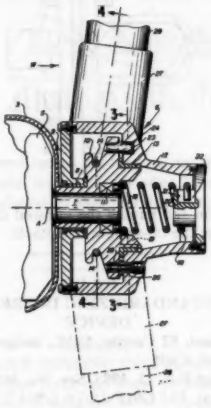
WIND ENERGY CONVERSION SYSTEM

Ernest E. Rogers, Lake Geneva, Wis., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Sep. 10, 1981, Ser. No. 300,731

Int. Cl.³ F03D *7/02*

U.S. Cl. 290—44 **45 Claims**



1. A wind powered device comprising:

a support structure

a drive shaft mounted for rotation about its axis with respect to the support structure,

speed regulating means operatively connected to said drive shaft to regulate the speed at which said drive shaft may rotate,

a rotor assembly mounted on said drive shaft for rotational movement with respect to said drive shaft about the axis of said drive shaft and for rotation with respect to said support structure, said rotor assembly comprising at least one rotor blade, and

torque control means carried by said rotor assembly coupling said drive shaft and said rotor assembly for driving said drive shaft in response to rotation of said rotor assembly and for automatically changing the pitch of the blade as said rotor assembly rotates relative to said drive shaft about the axis of said drive shaft.

4,495,424

PLANT FOR UTILIZATION OF WIND AND WAVES

Bernhard Jöst, Traminerweg 4, D-8600 Mannheim 31, Fed. Rep. of Germany

PCT No. PCT/DE82/00086, § 371 Date Jan. 7, 1983, § 102(e) Date Jan. 7, 1983, PCT Pub. No. WO82/03662, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 15, 1982, Ser. No. 456,005

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3145419

Int. Cl.³ F03B *13/12;* **F04B** *17/02*

U.S. Cl. 290—53 **9 Claims**

1. A plant for the combined utilization of wind and wave energy in an ocean region, comprising:

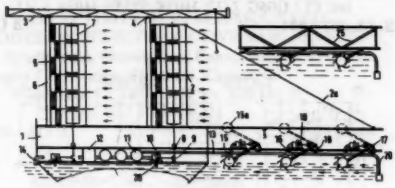
(a) a floating carrier for said plant;

(b) a plurality of rotatable wind wheels driving respective axles;

(c) a plurality of pendulum rods connected to floats disposed on the surface of the sea for movement up and down with the waves thereof, said up and down movement being with respect to said carrier;

(d) a first plurality of pumps driven by the axles of said rotatable wind wheels through crank rods and crank shafts connected therebetween;

(e) a second plurality of pumps driven by the up and down movement of said floats through toothed segments connected to said pendulum rods for rotational movement about a shaft mounted to said carrier and operatively connected to said pumps through gears and crank pins;



said pumps, when driven by said wind wheels and said floats, being adapted to suction in water through suction conduits;

(f) at least one pressure vessel for receiving said water from said pumps; and

(g) a turbo generator driven by the water discharged by said at least one pressure vessel.

4,495,425

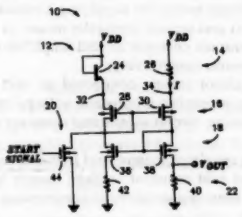
V_{BE} VOLTAGE REFERENCE CIRCUIT

James A. McKenzie, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1982, Ser. No. 391,780

Int. Cl.³ G05F *3/16*; H03L *1/00*

U.S. Cl. 307—297 **14 Claims**



1. A voltage reference circuit comprising:

reference voltage means, for providing an output reference voltage;

reference current means, for providing a reference current proportional to the output reference voltage;

a differential stage having first and second inputs coupled to said reference voltage means and reference current means, respectively, and first and second current outputs;

first and second impedances, each having a first terminal coupled to a voltage node and a second terminal coupled to said first and second current outputs, respectively, for developing an output voltage proportional to said reference voltage; and

current mirror means coupled between said differential stage and said first and second impedances, for providing a mirror current to said first and second impedances.

4,495,426

LOW POWER INVERTER CIRCUIT

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 24, 1981, Ser. No. 335,028

Int. Cl.³ H03K *19/096, 19/20, 17/693*

U.S. Cl. 307—453 **5 Claims**

1. A low power logic circuit comprising:

a node;

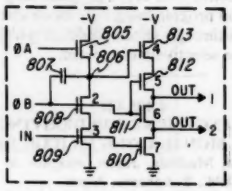
a voltage supply for supplying voltage to the low power logic circuit;

an input line means for receiving an input signal with a first and second logic level;

an output line;

a first and second clock means for providing a first and second clock signal, the first clock signal having an anti-phase relationship with the second clock signal;

first circuit means, connected to said first and second clock means and said voltage supply for precharging the node with the supply voltage in response to the first clock signal, and conditionally discharging the node in response to the second clock signal;



a second circuit means connected to said input line means for discharging said node upon an occurrence of the first logic level and the first circuit means conditioned to discharge said node; and

third circuit means connected to said second circuit means, said node, said input line means, said second clock means, said power supply and said output line, for isolating said output line from the node, in response to the second clock signal by disabling the third circuit means when the first clock signal enables the first circuit means, the third circuit means includes: switching means, connected to said power supply and said node for providing an output signal to said output line upon an occurrence of a preselected change of level of said node with an occurrence of a preselected clock level of said second clock signal.

4,495,427

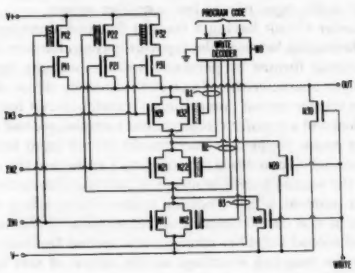
PROGRAMMABLE LOGIC GATES AND NETWORKS

James M. Cartwright, Jr., Cambria Heights, N.Y., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 213,361, Dec. 5, 1980, abandoned. This application Mar. 30, 1983, Ser. No. 480,596

Int. Cl.³ H03K *19/094, 19/177*

U.S. Cl. 307—469 **65 Claims**



52. A programmable electric network formed from connections of non-programmed switch elements which during normal operation of the network at times programming is not being done respond to signals in a normal range and at least one programmed-conduction switch element selectively connect-

ing a respective pair of nodes each which programmed-conduction switch element is programmable to be either non-conductive or fully conductive responsive to a plurality of programming voltages supplied as bits of a programming instruction, said programmed-switch element being one the conduction of which is not appreciably altered responsive to said signals in a normal range and essentially consists of:

a plurality of programmable-threshold-voltage transistors, each being of a type with its threshold voltage electrically alterable by application of a programming voltage to its gate, said programmable-threshold-voltage transistors being connected as a logic gate for programming instructions, with respective gate electrodes connected for receiving respective ones of the programming voltages that are bits of said programming instruction and with respective channels through selected ones of which said pair of nodes may be selectively connected.

4,495,428

CIRCUIT ARRANGEMENT FOR DERIVING A LEVEL CONTROL SIGNAL USING SILICON DIODES

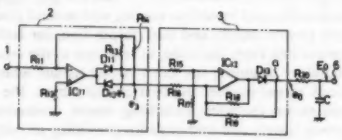
Yukinobu Ishigaki, Machida, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 7, 1982, Ser. No. 386,157

Claims priority, application Japan, Jun. 9, 1981, 56-88460; Jun. 9, 1981, 56-88461; Jun. 9, 1981, 56-88459; Jun. 15, 1981, 56-92027; Jul. 13, 1981, 56-109128

Int. Cl.³ G06G *7/12*; H03K *5/00*

U.S. Cl. 307—490 **12 Claims**



1. A circuit arrangement for deriving a level control signal from an input signal, comprising:

a circuit arrangement input terminal to which said input signal is applied and a circuit arrangement output terminal from which said level control signal is derived;

a linear detector comprising a linear-detector input terminal and a linear-detector output terminal, first amplifier means coupled to said linear-detector input terminal, a first silicon diode coupled to the output of the first amplifier means for passing an output signal therefrom to said linear-detector output terminal, and feedback circuit means for coupling a voltage at said linear-detector output terminal to the input of said first amplifier means;

a transfer circuit having a transfer function describing the relationship between the input-to-output characteristic of a circuit formed by germanium diodes and the input-to-output characteristic of a circuit formed by silicon diodes, the tranfer circuit comprising a transfer-circuit input terminal and a transfer-circuit output terminal, second amplifier means coupled to said transfer-circuit input terminal, a second silicon diode for coupling a voltage at the output of the second amplifier means to said transfer-circuit output terminal, a first feedback resistor for coupling a voltage at said transfer-circuit output terminal to the input of said second amplifier means, and a second feedback resistor for coupling a voltage at the output of said second amplifier means to the input thereof; and

a time constant circuit connected to said circuit arrangement output terminal;

said linear-detector input and output terminals and said transfer-circuit input and output terminals being connected in circuit between said circuit arrangement input terminal and said circuit arrangement output terminal.

4,495,429

LIMITER AMPLIFIER

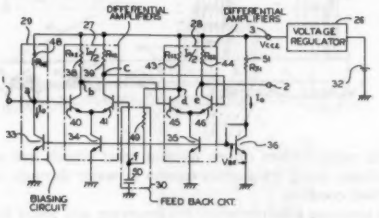
Takashi Oda, and Koichi Nagata, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,513

Claims priority, application Japan, Jun. 12, 1981, 56-90516

Int. Cl.³ G06G *7/12*; H03K *5/153*; H03F *3/45*

U.S. Cl. 307—491 **8 Claims**



1. A limiter amplifier comprising:

power supply means;

a plurality of differential amplifier means connected in cascade between an input terminal and an output terminal for amplitude-limiting an input signal applied to said input terminal to provide an amplitude-limited output signal at said output terminal, each of said amplifier means having first transistor means;

biasing circuit means connected to supply a bias voltage to the input terminal of said differential amplifier means, said biasing circuit means having second transistor means;

constant voltage means for supplying a constant bias voltage to said first and second transistor means to enable them to supply constant currents to said amplifier means and said biasing means, respectively;

voltage regulator means connected to said power supply means for supplying a constant voltage to said amplifier means, biasing circuit means and constant voltage means; and

said voltage regulator means, said first and second transistor means and said constant voltage means having substantially the same temperature characteristics.

4,495,430

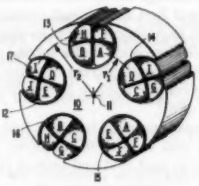
BALANCED ARMATURE WINDING FOR MOTORS

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jun. 22, 1979, Ser. No. 51,333

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—198 **5 Claims**



1. An armature for an electromechanical device comprising;

a substantially cylindrical member having an axis of rotation along the length thereof,

said cylindrical member including a plurality of exterior lengthwise slots,

electrically conductive wire wound in said slots to form a plurality of serially connected coils,

said coils located closer to the axis of rotation of said cylindrical member having a greater number of turns of said

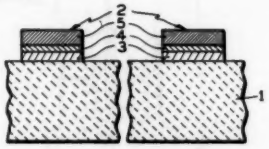
conductive wire than coils located a greater distance away from said axis of rotation.

4,495,431

LOW REFLECTIVITY SURFACE-MOUNTED ELECTRODES ON SEMICONDUCTIVE SAW DEVICES

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,185
Int. Cl.³ H03H *9/25*
U.S. Cl. 310—313 B **6 Claims**



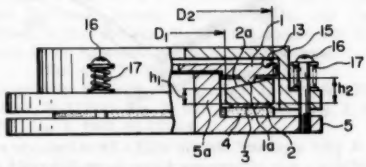
1. A surface acoustic wave device comprising:
a substrate of semiconducting and piezoelectric material; and
metallic electrodes formed on the surface of said substrate, characterized by:
said electrodes comprising gold and germanium with germanium consisting of about 2%–3% of the total gold and germanium, said electrodes having thickness which is a small fraction of the design acoustic wavelength of the device.

4,495,432

PIEZOELECTRIC VIBRATION WAVE MOTOR WITH SLOPED DRIVE SURFACE

Makoto Katsuma, Kawasaki; Hiroyasu Murakami, Tokyo, and Akira Hiramatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,004
Claims priority, application Japan, Dec. 15, 1982, 57-219532; Dec. 27, 1982, 57-234720; Jan. 31, 1983, 58-14246
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **5 Claims**



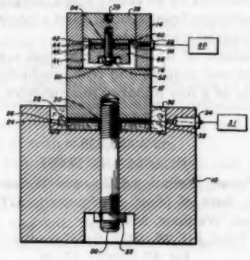
1. A vibration wave motor comprising:
a plurality of electrostrictive element groups arranged or polarized phase-differentially, said electrostrictive element groups each including at least one electrostrictive element;
a ring-shaped vibration member for generating a travelling vibration wave when voltages having phase differences therebetween are applied to said electrostrictive element groups, said vibration member having a sloped area, a thickness of said sloped area increasing as it radially goes from a center to an outer circumference; and
a movable member press-contacted to said vibration member such that said movable member is friction-driven by said vibration member.

4,495,433

DUAL CAPABILITY PIEZOELECTRIC SHAKER

Anthony A. Sheridan, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1983, Ser. No. 554,419
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—329 **5 Claims**



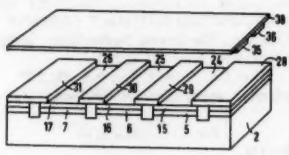
1. A shaker device for performing absolute and comparison calibration of accelerometers, comprising:
a massive shaker base;
a shaker head having a cylindrical axial cavity in a lower portion thereof;
at least one expander piezoelectric disc disposed between the shaker base and shaker head;
means for providing an input driving voltage over a predetermined continuous frequency range to the at least one expander piezoelectric disc such that comparison calibration can be accomplished at points over said predetermined continuous frequency range;
a reference accelerometer mounted axially within the cylindrical axial cavity of said shaker head;
means electrically coupled to said reference accelerometer for detecting and recording an output signal; and
means for mounting accelerometers to be calibrated on said shaker head.

4,495,434

PRESSURE-SENSITIVE TRANSDUCER USING PIEZO CERAMIC MATERIAL

Heinrich Diepers, Hoechstadt, and Herbert Schewe, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,408
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236098
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—338 **5 Claims**



1. A pressure-sensitive transducer arrangement comprising, in combination:
(a) a substrate having a substrate surface;
(b) a plurality of strip-shaped column conductors disposed on said substrate surface and electrically insulated from

each other (;), succesive ones of said column conductors being spaced apart a maximum distance of a few hundred micrometers,

(c) a plurality strip-shaped dielectric elements formed of a piezoceramic material, each dielectric element being disposed over a corresponding one of said column conductors; and

(d) a plurality of strip-shaped row conductors disposed above said dielectric elements and separated therefrom at each crosspoint by an empty space, succesive ones of said row conductors being spaced apart a maximum distance of a few hundred micrometers;

whereby a matrix of transducer elements are formed at the crosspoints of said column and row conductors with a maximum grid size of a few hundred micrometers.

4,495,435

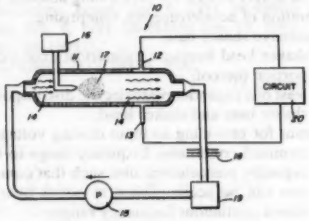
PLASMA SWITCH

Joseph M. Proud, Wellesley Hills, and Walter P. Lapatovich, Watertown, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 26, 1982, Ser. No. 402,174

Int. Cl.³ H01J *17/26*

U.S. Cl. 313—231.31 **6 Claims**



1. A plasma switch for switching an electrical circuit having a voltage potential, comprised of:

a discharge tube;

at least two electrodes arranged in said tube and adapted to be coupled to said voltage potential;

means for moving a gas stream of noble gas through said tube, said noble gas supporting a plasma discharge between said electrodes, whereupon said switch is in an on-state; and

means for ejecting a mixture of MX_3 and SiO_2 particles into said gas stream upstream from said electrodes, wherein M is a metal selected from Group IIIA of the periodic table and X is a halogen, said mixture reacting in said plasma discharge increasing the vapor pressure of the MX_3 and generating SiX_4 thereby quenching electrons and extinguishing said plasma discharge whereupon said switch is in an off-state.

4,495,436

ELECTRIC LAMP HAVING A LAMP CAP WHICH IS CONNECTED WITHOUT CEMENT

Victor R. Notelteirs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,737

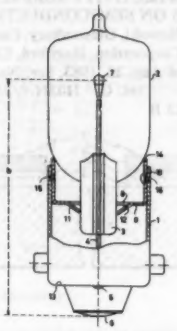
Claims priority, application Netherlands, Jul. 21, 1981, 8103436

Int. Cl.³ H01J *5/48*

U.S. Cl. 313—318 **5 Claims**

1. An electric lamp which comprises:

a substantially metal cup, a substantially metal lamp cap and a glass envelope, said lamp cap having a base, said envelope being secured in said lamp cap without cement, said lamp envelope being sealed at one end by means of a pinch through which current supply conductors extend from contacts on said lamp cap to an electric element disposed inside said lamp envelope, said cup having an open end and a base, said open end being opposite said base, said base having an aperture therein, said pinch of said lamp envelope extending through said aperture in said base of said metal cup, said cup being secured in said lamp cap and having along the edge of said aperture oppositely-located



lugs which face said base of said lamp cap and bear against said pinch of said lamp envelope, said open end of said metal cup being in line contact with said lamp envelope, said metal cup being secured in said lamp cap with said base thereof facing said base of said lamp cap and engaging said lamp envelope with said open end thereof.

4,495,437

GRID APPARATUS FOR USE WITH A COLOR CATHODE RAY TUBE

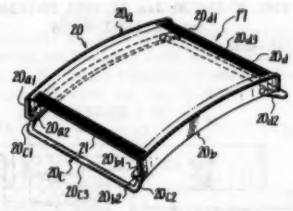
Hisao Kume, Aichi, and Takahide Sanma, Ohgaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,018

Claims priority, application Japan, Aug. 26, 1981, 56-133791

Int. Cl.³ H01J *29/07, 19/48*

U.S. Cl. 313—403 **2 Claims**



1. A grid apparatus for use with a color cathode ray tube comprising a pair of opposing frame members, a grid element stretched between said pair of opposing frame members, and a pair of arm portions respectively fixed at free ends thereof to said pair of opposing frame members for mechanically connecting said pair of opposing frame members, and for stretching said grid element with a predetermined tension in cooperation with said pair of opposing frame members, in which each of said pair of arm portions is curved as a U-shape in a substantially single plane, both ends thereof are connected to said pair of opposing frame members at positions outside from their Bessel points, the plane in which each of said pair of arm portions is arranged is respectively widened rearward with an angle from 45° to 65° with respect to a surface perpendicular to the axis of said cathode ray tube, and a ratio I_1I/hd **2** is selected to be a value ranging from 1.5 to 2.0 **where** I_1 is the moment of

inertia of the area of said frame members and I_2 is the moment of inertia of the area of said arm portions.

4,495,438

DEVICE FOR ADJUSTING ELECTRON BEAMS IN A CATHODE-RAY TUBE

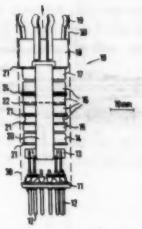
Walter Kornaker, Berkheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1982, Ser. No. 380,793

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123301

Int. Cl.³ H01J *29/51*

U.S. Cl. 313—412 **36 Claims**



1. Apparatus for generating and adjusting electron beams in a cathode-ray tube comprising:

an electron gun for producing a central and two outer electron beams each along a respective central axis extending in a z direction and lying in an x-z plane, said gun having electrodes and adapted to be housed in the neck of said cathode ray tube, said gun extending in a z-direction;

a magnetic ring attached to said gun, said ring being magnetizable from outside said neck, said ring having two long sides and two short sides defining an oblong area, said oblong area being normal to said x-z plane, said oblong area having its longer axis lying in said x-z plane and having its shorter axis perpendicular to said x-z plane, said ring being formed such that the distance in a y direction of said ring from the respective said central axis of each of said two outer electron beams is shorter than the distance in the y direction of said ring from said central axis of said central electron beams.

4,495,439

MAGNETIC FOCUSING TYPE CATHODE RAY TUBE

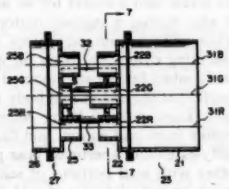
Taketoshi Shimoma, Isezaki; Kumio Fukuda, and Toshio Shimaoogi, both of Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,364

Claims priority, application Japan, Sep. 2, 1981, 56-137004; Sep. 2, 1981, 56-137005; Sep. 2, 1981, 56-137006; Sep. 2, 1981, 56-137007; Sep. 2, 1981, 56-137008

Int. Cl.³ H01J *29/64, 29/51*

U.S. Cl. 313—412 **9 Claims**



1. A cathode ray tube, comprising:

a cathode ray tube envelope having a face plate formed with a screen, a funnel portion integrally provided on said face plate, and a neck portion integrally provided on said funnel portion;

means for generating magnetic fields within an electron gun device; and

said electron gun device, disposed within said neck portion, comprising a cathode and a magnetic yoke, adjacent to said cathode with a magnetic gap therebetween, said device generating electron beams in in-line form, and said magnetic yoke including:

a first yoke, disposed on the cathode side of said magnetic gap and having a passage therein permitting the passage of the electron beams therethrough,

a second yoke, disposed on the screen side of said magnetic gap, and having a passage therein permitting the passage of said electron beams therethrough and magnetically asymmetrical with said first yoke;

a third yoke disposed adjacently between said first yoke and said cathode, providing a strong magnetic shield effect against any magnetic fields generated by said means for generating magnetic fields;

a fourth yoke, disposed adjacent to said second yoke providing a weak magnetic shield effect against any magnetic fields generated by said means for generating magnetic fields; and

said magnetic yoke constituting means for causing one of the radial components of the magnetic field in said magnetic gap to have an opposite polarity to that of other magnetic fields present, the radial component of a magnetic field in said magnetic gap defining a prescribed angle with respect to a beam traveling direction.

4,495,440

ARC-EXTINGUISHING AMPUL AND FLUORESCENT LAMP HAVING SUCH AMPUL MOUNTED ON EACH ELECTRODE STRUCTURE

Steven C. Schlitt, Merrimac; Thomas S. Yong, Danvers; William J. Roche, Merrimac, and John W. Anderson, Jr., Ipswich, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,274

Int. Cl.³ H01J *61/10, 61/42, 61/28*

U.S. Cl. 313—492 **6 Claims**

1. A low-pressure arc discharge lamp comprising:

(a) a hermetically sealed tubular glass envelope having a

luminescent material coated on the interior surface thereof and two opposed ends;

(b) a glass stem at each of said ends, said stem comprising a flare sealed to said envelope and an inwardly projecting body terminating in a press;

(c) an electrode structure mounted on each stem, said electrode structure comprising two lead-in wires sealed in said press and a filament mounted on said lead-in wires, said filament having a coating of electron-emissive material thereon;

(d) two heat shields, one of said heat shields being mounted on each electrode structure between said filament and said glass stem;

(e) a fill within said envelope, said fill being an arc discharge generating and sustaining medium;

(f) two arc-extinguishing ampuls, one of said ampuls being mounted on each heat shield on the side facing said filament, each ampul having a thin glass wall enclosing a hermetically sealed cavity and being such that said body or a portion thereof will rupture when raised to the melting point of the glass;

(g) an arc-extinguishing fluid within said cavity;

(h) at least one electrically conductive support wire mounted to said ampul, said support wire being means for mounting said ampul on said heat shield; and

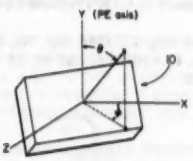
(i) a heat-conductive coating covering the outer surface of said ampul and a portion of said support wire.

4,495,441

PYROELECTRIC TARGETS AND METHOD OF MANUFACTURE

N. Vasanth Rao, Foster, R.I., and Avner Shaulov, Monsey, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,432
Int. Cl.³ H01J *9/20, 29/10*
U.S. Cl. 313—388 **14 Claims**



1. A pyroelectric target comprising a pyroelectric material having a pyroelectric axis, said material being anisotropic dielectrically and having two faces which are substantially planar and which are substantially parallel to each other, said faces being provided with electrodes, characterized in that the angle between the pyroelectric axis and a normal to the planar faces is greater than substantially 0° but less than 90°.

4,495,442

COLD-CATHODE MAGNETRON INJECTION GUN

Kazuo Minami, Kawasaki, Japan, assignor to Tokyo Institute of Technology, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,465
Claims priority, application Japan, Sep. 17, 1981, 56-145478
Int. Cl.³ H01J *23/16, 29/96*
U.S. Cl. 315—3 **3 Claims**

1. A cold-cathode magnetron injection gun, comprising

a vacuum container;

an insulating holder, said insulating holder extending from a sidewall of said vacuum container toward the inside thereof;

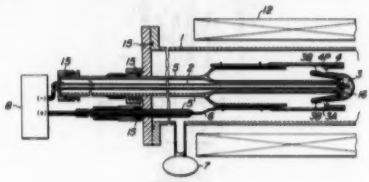
a conductor airtightly secured to said insulating holder, said conductor extending from a voltage source outside said vacuum container to the inner end of said insulating holder;

a conical cold-cathode having a longitudinal axis secured to the inner end of said insulating holder and connected to the inner end of said conductor, the apex of said conical cathode extending away from said conductor;

a cylindrical anode secured to said insulating holder, said cylindrical anode coaxially surrounding said conical cathode;

a lead wire connecting said cylindrical anode to said voltage source;

an annular projection extending from the inner surface of said cylindrical anode toward said conical cathode, an end of said annular projection being spaced from said conical cathode;



an insulating film coated on a portion of the outer surface of said conical cathode, the portion of the outer surface of said conical cathode not coated by said insulating film forming a conductive emission ring surface facing the end of said annular projection; and

a solenoid coil surrounding said vacuum container, said solenoid coil generating a uniform magnetic field within said vacuum container extending parallel to the axis of said conical cathode, said conical cathode having an inclined surface defining a magnetron injection gun adapted to operate under conditions of $\alpha_0 \leq 0.1$, where $\alpha_0 = E_0/(cB)$, E_0 is the electric field intensity at said emission ring surface, c the velocity of light in vacuum, and B the magnetic flux density of said magnetic field.

4,495,443

COMPACT FLUORESCENT LAMP COMBINATION, AND METHOD OF MAKING IT

John H. Cummings, 11691 SE. Wilding Rd., Santa Ana, Calif. 92705

Filed Jan. 27, 1984, Ser. No. 574,479
Int. Cl.³ H01J *7/44, 17/34, 19/78, 23/16*
U.S. Cl. 315—58 **12 Claims**

1. A method of manufacturing a combination fluorescent lamp and screw plug, said method comprising:

(a) selecting a compact fluorescent lamp having relatively small fluorescent tube means and a base, and also having two contact pins on said base, and also having a starter housing projecting from said base on the side thereof remote from said tube means,

(b) selecting a screw plug having a metal screw portion adapted to screw into a socket for an incandescent lamp bulb, and also having a contact button coaxial to said screw portion and near one end thereof, and also having a hollow insulating cylindrical body on which said screw portion and contact button are mounted, and also having a flange portion at the end of said body remote from said button, said flange portion being recessed on the side thereof remote from said button, said flange portion having inwardly-extending apertured boss portions that define, together with wall portions of said flange portion, recess regions on opposite sides of each boss portion, said boss portions being along a line diametral to said body and being on opposite sides of said body,

(c) mounting, on said flange portion, thin and insulating socket means having pin-socket means therein adapted to

receive said contact pins, and having opening means adapted to receive said starter housing, said socket means being sufficiently thin that said starter housing projects downwardly into said hollow cylindrical body,

said mounting step being so effected that said pin-socket means are registered with said recess regions whereby said pins will be registered with said recess regions when said lamp is assembled with said screw plug and said insulating socket,

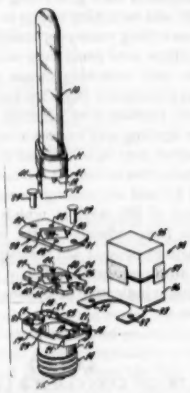
(d) mounting "ballast" coil means on said screw plug, and

(e) electrically connecting said screw portion, contact button, pin sockets, and ballast coil means in circuit with each other.

4. A screw-plug base adapted to be combined with a compact fluorescent lamp, said compact fluorescent lamp having relatively small fluorescent tube means and also having a base, and further having two contact pins on said base, and further having a starter housing projecting from said base on the side thereof remote from said tube means, said screw-plug base comprising:

(a) a screw plug having a metal screw portion adapted to screw into a socket for an incandescent light bulb,

said screw plug also having a contact button coaxial to said screw portion and near one end thereof, said screw plug also having a hollow insulating cylindrical body on



which said screw portion and contact button are mounted, said screw plug also having a flange portion at the end of said body remote from said button,

said flange portion being recessed on the side thereof remote from said button,

said flange portion having inwardly-extending apertured boss portions that define, together with wall portions of said flange portion, recess regions on opposite sides of each boss portion,

said boss portions being along a line diametral to said body and being on opposite sides of said body,

(b) thin and insulating socket means mounted on said flange portion,

said insulating socket means having pin-socket means therein adapted to receive said contact pins,

said socket means further having opening means therein adapted to receive said starter housing,

said socket means being sufficiently thin that said starter housing projects downwardly into said hollow cylindrical body when said fluorescent tube is assembled with said screw plug,

said pin-socket means being registered with said recess regions whereby said pins will be registered with said recess regions when said fluorescent lamp is assembled with said screw plug, and

(c) "ballast" coil means mounted on said screw plug.

4,495,444

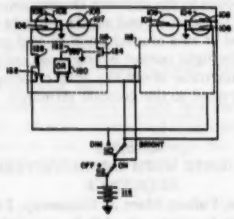
VEHICLE LIGHTING SYSTEM

Francis J. Thomas, Box 45, Candlewood Isle, New Fairfield, Conn. 06810

Filed Mar. 7, 1983, Ser. No. 472,577

Int. Cl.³ H05B *39/10*

U.S. Cl. 315—82 **11 Claims**



1. A lighting system for a surface-movable vehicle of the type employing a first light-producing operator-selectable means to provide bright illumination and a second light-producing, operator-selectable means to provide dim illumination, where said bright illumination produces lighting of the surface further from the vehicle that said dim illumination, characterized by means responsive to the flow of electric current through said first light-producing means for sensing the operability of said first light-producing means to provide an indication of inoperability, and means comprising an OR circuit responsive to said indication of inoperability and to an indication that said second light-producing means has been operator-selected to cause said second light-producing means to operate in either case.

4,495,445

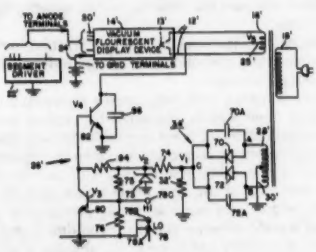
BRIGHTNESS CONTROL FOR A VACUUM FLUORESCENT DISPLAY

Stephen D. Turney, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,385

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—169.1 **22 Claims**



1. A brightness control for a vacuum fluorescent display comprising:

a vacuum fluorescent display having anode, grid and cathode terminals, said anode and grid terminals adapted for coupling to means for supplying selected voltages thereto,

means coupled to said cathode terminals for supplying substantially continuous AC potential thereto, and

control means having first and second operative states coupled to said means for supplying AC potential to said cathode terminals,

said control means being responsive to said means for supplying AC potential such that said control means assumes

said second operative state only during time periods symmetrical about the zero crossings of the AC potential,

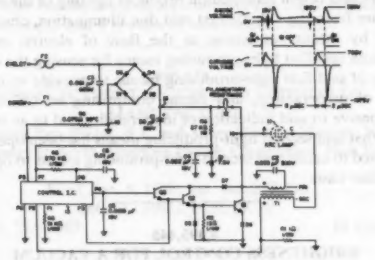
said means for supplying AC potential being responsive to the first operative state of said control means to supply said AC potential at a first level and being responsive to the second operative state of said control means to supply said AC potential at a second level,

and said vacuum fluorescent display producing light output only in response to the delivery thereto simultaneously of the selected voltages to said anode and grid terminals and AC potential at said second level to said cathode terminals, whereby light output is produced only during time periods symmetrical about the zero crossings of the AC potential supplied to the cathode terminals.

4,495,446
LIGHTING UNIT WITH IMPROVED CONTROL SEQUENCE

Thomas A. Brown, Fulton; Marc A. Dissosway, Liverpool; William Peil, North Syracuse, all of N.Y., and Spiro Vamvakas, Sagamore Hills, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,910
Int. Cl.³ H05B 37/00
U.S. Cl. 315—206 **20 Claims**



1. A lighting unit comprising:

A. a dc power source having two output terminals, the second, a reference terminal;

B. an arc lamp; and

C. an operating network comprising:

(1) an incandescible filamentary resistance serially connected with said arc lamp to provide standby light for said arc lamp.

(2) alternating electrical energy transforming means having a primary and a secondary winding for deriving a stepped-up output voltage,

(3) semiconductor switching means responsive to first and second input signals generated by control means which has a multistate arc lamp starting sequence, said semiconductor switching means being rendered conductive; (1) at a low, not excluding zero, switching rate in response to the presence of the first input signal, and (2) at a high switching rate in response to the presence of the second input signal, said semiconductor switching means being in a nonconductive condition in the absence of said first and second input signals;

(4) means for interconnecting said switching means, said control means and said dc power source, said interconnecting means providing four paths, a first path between said dc power source and said filamentary incandescent filament, a second path between said switching means and the node formed by said connection of said incandescible filament and one side of said arc lamp and also providing connection between said switching means and one side of said primary winding, a third path between the other side of said arc lamp and one side of said secondary winding and a fourth path between said control means and the other side of said secondary winding, said interconnecting means coupling electrical energy from said d.c. source to, (1) said incandescible filament resistance, (2) said arc lamp, and (3) said transforming means, said electrical energy being coupled in a form determined by the conductive and nonconductive conditions of said switching means, said coupled forms including;

(a) a low, not excluding zero, frequency periodic form to said resistive filament via said second path for standby illumination when said switching means is operated at said low, not excluding zero, switching rate,

(b) a higher frequency (relative to said low frequency) periodic form to said resistive filament for standby illumination and to the primary winding of said transforming means via said second path (ii) for starting and transitioning said arc lamp when said switching means is operated at said high switching rate, and,

(c) a dc form to said serially connected filament and arc lamp via said first path for energizing and ballasting said arc lamp during said nonconductive condition of said switching means,

(5) said control means having means responsive to timing information and having means for sensing the arc current conditions of said arc lamp via said fourth path both for operating said switching means, said multistate arc lamp starting sequence having states including:

(a) a preignition state generating said first input signal to operate said switching means at said low, not excluding zero, switching means for standby illumination,

(b) an ignition state generating said second input signal to operate said switching means at said high switching rate, appropriately high for energizing both said filamentary resistance to produce its incandescence and further igniting and transitioning said arc lamp,

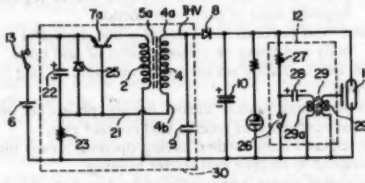
(c) an ignited state in which said switching means remains nonconductive so long as arc current of said arc lamp is sensed by said arc sensing means, and

(d) an end of life state in which said switching means remains nonconductive if the arc current of said arc lamp sensed by said arc sensing means has not transitioned after passage of sufficient time which arc current condition is indicative of a probable failure of said lighting unit.

4,495,447
DC-DC CONVERTER CIRCUIT

Igarashi Shigemi, Tokyo, Japan, assignor to Sato Koki Company Ltd., Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,645
Claims priority, application Japan, Jun. 8, 1980, 55-111405[U]; Jun. 8, 1980, 55-111406[U]; Jun. 8, 1980, 55-111407[U]; Dec. 6, 1980, 55-82481[U]
Int. Cl.³ H05B 37/00
U.S. Cl. 315—241 P **3 Claims**



1. A DC-DC converter photographic flash lamp circuit device comprising:

a transformer having a primary coil and a high voltage secondary coil;

a high current gain transistor connected between a DC voltage source and said primary coil;

said high current gain transistor having its base connected to the earth - ground side of said secondary coil;

a diode connected to the base of said high current gain transistor and between said DC voltge source for protecting said high voltage gain transistor from reverse voltages produced by said primary coil;

a feedback capacitor connected across said high voltage secondary coil;

a charging circuit comprised of a rectifier and a large capacity condenser connected to the other side of said secondary transformer;

trigger circuit means comprised of a trigger transformer, trigger condenser and triggering contact switch connected to trigger a flash lamp and discharge said large capacity condenser through said flash lamp thereby emitting light.

4,495,448

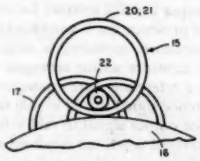
MEANS AND METHOD OF SENSING MOTOR ROTATION SPEED FROM STRAY ESCAPING FLUX

Robert F. Dumbeck, FM 3000 Box 548, Elgin, Tex. 78621

Filed Nov. 6, 1981, Ser. No. 318,699

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—54 **17 Claims**



5. The method of deriving an electrical signal varying in characteristic as a function of the operational characteristics of a motor with electromagnetic stator and rotor windings comprising the steps of, operating the motor under rated conditions from a specified line power source, picking up signals from the stray magnetic flux excaping from the motor without requiring motor modifications for the purpose of providing a signal by placing an electromagnetic sensor responsive to the escaping magnetic flux within said field to sense the flux without any conductive or mechanical connections to the motor, processing and signals derived from the escaping magnetic flux by said sensor to produce information representative of the rotational speed of the motor, fortifying the electromagnetic signals sensed by the sensor by amplifying the signals and providing positive feedback of the amplified signals into the sensor, relatively positioning a plurality of windings in the sensor, providing one of the windings of a smaller diameter compared with larger diameters of the other windings, coaxially positioning the windings of larger diameter, offsetting the smaller diameter winding to a position adjacent a circumferential portion of the larger windings, and providing said positive feedback into the offset winding.

4,495,449

ELECTRIC PROPULSION SYSTEM FOR TRACTION VEHICLES WITH AUTOMATIC RETARD SPEED REGULATION

Kenneth G. Black, and Stuart W. McElhenny, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 2, 1983, Ser. No. 557,553

Int. Cl.³ H02P *7/685*

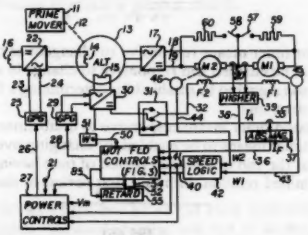
U.S. Cl. 318—60 **12 Claims**

1. In a traction vehicle propulsion system comprising a pair of adjustable speed d-c electric motors which can either propel or dynamically retard the vehicle, each of said motors having armature windings adapted to be connected to a source of d-c voltage of variable average magnitude and having field windings adapted to be connect to a separately controllable source of excitation current the average magnitude of which is variable and depends on the value of a control signal that is supplied to said controllable source, said propulsion system including command means for producing a predetermined command signal when dynamic retarding of the vehicle is desired, the improvement comprising:

a. first means coupled to both of said motors for providing a feedback signal representative of the actual rotational speed of the slower motor;

b. second means for providing a speed reference signal of preselectable value; and

c. control means connected to said first and second means and to said command means and responsive to the excitation current in said field windings for producing said control signal, said control means including



(i) third means effective in the absence of said command signal for making the value of said control signal representative of any deviation of the absolute magnitude of said excitation current from a first reference magnitude which varies as a predetermined function of the magnitude of current in the amature windings of said motors, and

(ii) fourth means effective when said command signal is produced and responsive to the rotational speed of the slower motor exceeding a first predetermined desired speed for making said control signal value representative of any deviation of the absolute magnitude of said excitation current from a second reference magnitude which is normally determined by the error between said slower motor speed and said first predetermined desired speed, whereby said excitation current magnitude is varied as necessary to minimize said error.

4,495,450

CONTROL DEVICE FOR BRUSHLESS MOTOR

Hisashi Tokizaki, and Hironobu Sato, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed Dec. 16, 1983, Ser. No. 562,434

Claims priority, application Japan, Dec. 29, 1982, 57-232761; Jan. 26, 1983, 58-11733; Mar. 23, 1983, 58-42565[U]; Apr. 13, 1983, 58-66091; Aug. 2, 1983, 58-142195

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—138 **8 Claims**

1. A control device for controlling conduction to stator coils in a brushless motor having stator coils of a plurality of phases and a rotor having a permanent magnet of a plurality of poles, said control device comprising:

power source means for supplying direct current power,

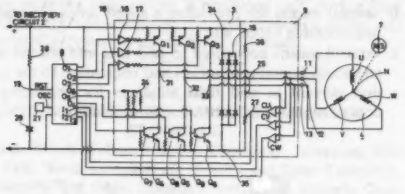
inverter means responsive to a control signal applied thereto for supplying said direct current power to said stator coils in a plurality of predetermined modes to be changed over so as to generate a rotational magnetic field in said stator coils,

reference voltage providing means for providing reference

voltage having a predetermined relation with voltage of said power source means,

comparing means for comparing voltage induced in said stator coils due to rotation of said rotor with said reference voltage so as to provide a comparison signal, and

mode controlling means for supplying said control signal corresponding to said predetermined modes for said inverter means, said mode controlling means including:



first timer means responsive to changeover of said modes to be enabled and responsive to change in said comparison signal to be disabled for determining a first period of time, and

second timer means responsive to disablement of said first timer means to be enabled for changing over said modes at the end of a second period of time having a predetermined relation with said first period of time.

4,495,451

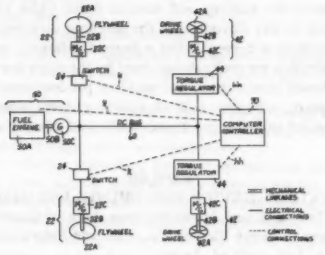
INERTIAL ENERGY INTERCHANGE SYSTEM WITH ENERGY MAKEUP BY COMBUSTION ENGINE ON DEMAND

Maxwell K. Barnard, 4700 Seventh Ave. NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 222,899, Jan. 6, 1981, abandoned. This application Jun. 7, 1982, Ser. No. 385,301

Int. Cl.³ H02K *7/02*

U.S. Cl. 318—150 **17 Claims**



2. An electrical energy interchange system for wheeled vehicle propulsion, comprising induction motor/generator driven/driving drive wheels, induction motor/generator driven/driving flywheel means, and fuel engine driven DC generator means, and system including:

(a) a plurality of flywheels each drives by a separate induction motor/generator;

(b) a plurality of drive wheels each directly and separately driven by a separate induction motor/generator;

(c) an electrical bus maintained at a DC voltage which is responsive to the operational conditions and the operational needs of the vehicle;

(d) bidirectional, variable frequency switching means between each of the induction motor/generators and the bus; and

(e) digital computer type controller means monitoring the DC voltage on the electrical bus and, responsive thereto, controlling the frequency and duty cycle of each of said switching means, and controlling the operation of said fuel engine driven DC generator means to deliver electrical energy to said DC bus as needed.

4,495,452

WINDSHIELD WIPER CONTROL HAVING A SENSOR AND A REPEATEDLY RENEWED OFFSET SIGNAL

Allan Boegh-Peterson, Flongvaenget 14, DK-2640 Hedehusene, Denmark

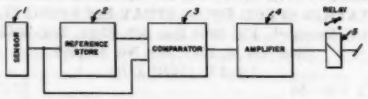
PCT No. PCT/DK82/00108, § 371 Date Aug. 8, 1983, § 102(e) Date Aug. 8, 1983, PCT Pub. No. WO83/02093, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 7, 1982, Ser. No. 525,035

Claims priority, application Denmark, Dec. 8, 1981, 5415/81

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—444 **1 Claim**



1. A windshield wiper control systems for automatic operation based upon the presence on a windshield of a predetermined amount of moisture, including a wiper, a motor for driving the wiper, a moisture sensor arranged within the area swept by the wiper, a reference store connected to the output of the sensor, a reference signal stored in said store, and means to compare the sensor output signal to said reference signal so that the motor is activated when the moisture amount exceeds the amount of the reference signal, so that each time the wiper has just passed the sensor, the sensor output signal is written to the store and is retained as a reference at the next comparison, and circuit means allowing said reference signal to continuously follow slow changes of the signal from the sensor.

4,495,453

SYSTEM FOR CONTROLLING AN INDUSTRIAL ROBOT

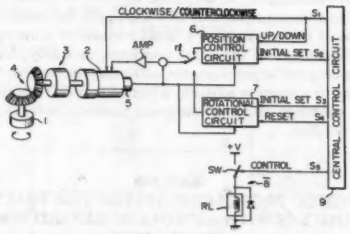
Hajimu Inaba, Hino; Shinsuke Sakakibara, Komae; Shigemi Inagaki, Musashino, and Nobutoshi Torii, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,396

Claims priority, application Japan, Jun. 26, 1981, 56-98388

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—568 **3 Claims**



1. A system for controlling an industrial robot having a wrist rotated by a direct-current motor which is controlled by feeding back the output pulses of a pulse coder (5) provided on the output shaft of said direct-current motor, comprising:

a stroke-limit position control means connected to said pulse coder, for controlling the position of said wrist between the minimum stroke and the maximum stroke;

a rotational control means connected to said pulse coder, for controlling the rotations of said wrist; and

a selecting means connected between said direct-current motor and the outputs of said stroke-limit position control means and said rotation control means, for selecting either stroke-limit position control or rotational control.

4,495,454

DEVICE FOR ELECTRIC CONTROL OF THE SPEED OF AN AUTOMOTIVE VEHICLE

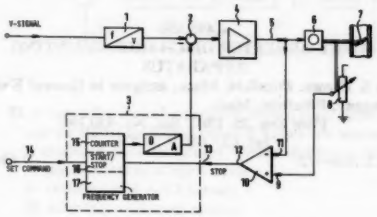
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,251

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130099

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—663 **3 Claims**



1. In a device for the electric control of the speed of an automotive vehicle driven by an internal combustion engine, the vehicle having a guide signal transmitter, a comparison element fed with a guide signal of the transmitter and a vehicle-speed signal, and a control amplifier which is arranged behind the comparison element and gives off a set signal to a setting drive for the displacement of a throttle valve which controls the air-fuel mixture of the internal combustion engine, the improvement comprising:

a position indicator coupled with the throttle valve for generating a feedback signal representing a position of the throttle valve, wherein the guide signal transmitter incorporates an integrator and a memory, and

means for comparing the set signal with the feedback signal, an output signal of the comparing means being coupled to the guide signal transmitter to provide for integration of the set signal by the integrator, the integration beginning upon application of a set command signal to the integrator and upon a setting of the throttle valve in a desired position by a driver of the vehicle, the integration terminating when the comparing means signals equality between the magnitudes of the set signal and the feedback signal, thereby to maintain a vehicle speed in accordance with the present position of the throttle valve.

4,495,455

MULTI-PHASE STEPPING MOTOR CONTROLLER

Shigeyuki Araki, Komae, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,981

Claims priority, application Japan, Feb. 22, 1982, 57-27240

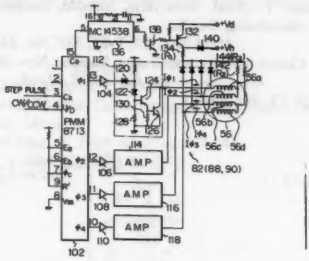
Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **11 Claims**

1. A stepping motor controller for controlling a stepping motor having multiple phases and excitation coils therefor in which m and n motor phases are alternately excited to drive the motor, comprising:

excitation means for energizing m excitation coils at a first predetermined timing to excite the m motor phases and sequentially energizing n excitation coils at a second predetermined timing to excite the n motor phases; and

control means for controlling the excitation means to energize the m and n excitation coils such that the magnitude of energization for the m excitation coils is equal to that of



energization for the n excitation coils which is multiplied by a coefficient k which is greater than 1.

4,495,456

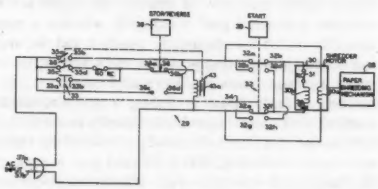
AUTOMATIC REVERSING SYSTEM FOR SHREDDER

Alfredo J. Vercillo, Harwood Heights, and Arthur Kuehn, Glenview, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Sep. 23, 1982, Ser. No. 422,282

Int. Cl.³ H02P *3/20*

U.S. Cl. 318—755 **10 Claims**



1. An automatic reverse shredder system, comprising:

a shredder having an AC drive motor with a run winding, a starter winding assembly, and centrifugal switch means for disconnecting power feed to the starter winding assembly when the motor is rotating above a predetermined speed;

an AC power source;

manually actuatable switch circuit means connected between said AC power source and motor windings, said switch circuit means together with said centrifugal switch means turning on the shredder motor for normal forward operation when manually actuated, and automatically reversing the motor when jamming of the shredder occurs and the motor falls below a predetermined speed; and

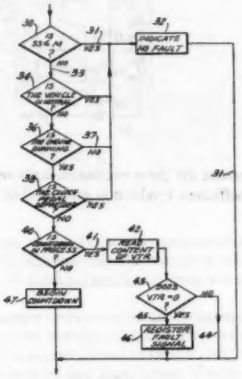
said manually actuatable switch circuit means including a momentary contact start switch, a momentary contact stop switch, reverse switch means for stopping reverse rotation of the motor after a predetermined reverse operation of the shredder, and a latch means, said latch means being directly latched when the start switch is actuated and being unlatched when either the stop switch or the reverse switch means is actuated.

4,495,457

METHOD OF PREVENTING ERRONEOUS GEAR SELECTION IN A VEHICLE TRANSMISSION

Hans V. Stahl, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Sweden

Filed Nov. 19, 1981, Ser. No. 322,851
Claims priority, application Sweden, Nov. 28, 1980, 8008402-3
Int. Cl.³ B60K *41/04*
U.S. Cl. 364—424.1 **3 Claims**



1. A method for preventing an automatic selection of an erroneous gear in a gearbox which is provided with a gear selection system which is operable in both a manual and an automatic selection mode and which may switch from the manual to the automatic mode when the system is operating in the manual mode and the gearbox is in a gear which is higher than the first gear, said method comprising the steps of:

generating, from the time that the engine is first started, output signals indicative of whether the engine is running, whether a forward gear is engaged, whether a manually operable clutch interfacing the gearbox and the engine is in a torque-transmitting position, and whether the vehicle speed is lower than a predetermined value;

generating a fault signal if, during a predetermined time interval, said output signals continually indicate that said vehicle speed is lower than said predetermined value, that said engine is running, that a forward gear is engaged and that said clutch is in said torque-transmitting position; said predetermined time interval starting from the time that said output signals simultaneously indicate that said engine is running, that a forward gear is engaged and that said clutch is in said torque-transmitting position; and

inhibiting the automatic selection by said gear selection system of a gear other than neutral in said gearbox due to the generation of said fault signal.

4,495,458

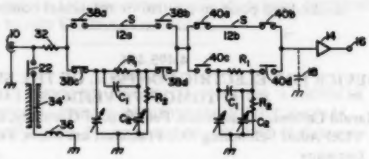
TERMINATION FOR HIGH IMPEDANCE ATTENUATOR

Desmond L. Murphy, Portland, Oreg., assignor to Tektronix, Beaverton, Oreg.

Filed Sep. 30, 1982, Ser. No. 431,852
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 R **10 Claims**

9. A termination circuit for a transmission line connected to a capacitive load, comprising:

a damping resistor connected in series with the input of said transmission line; and



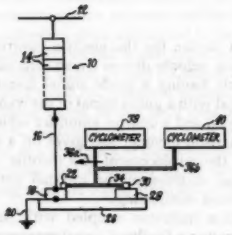
a series combination of a termination resistor, a delay line and an inductor connected between the input end of said damping resistor and ground.

4,495,459

SURGE ARRESTER DISCHARGE COUNTING APPARATUS

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 20, 1982, Ser. No. 420,195
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—72 **7 Claims**



1. Apparatus for counting discharges exceeding a predetermined minimum energy content of a surge arrester having a series stack of varistor elements, said apparatus including, in combination:

A. a separate varistor element characteristic of the arrester varistor elements and serially connected in the arrester discharge path;

B. a counter; and

C. a varistor temperature sensing device thermally coupled with said separate varistor element and operatively coupled with said counter to initiate the registration of a count therein each time an arrester discharge produces a temperature rise in said separate varistor element in excess of a predetermined amount.

4,495,460

RESETTABLE FEEDBACK SENSOR

David J. Bernays, Jr., San Jose, Calif., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 10, 1982, Ser. No. 387,161
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 A **2 Claims**

1. A digital feedback control system comprising:

a difference network including means for generating an error signal representative of the difference between an input signal and a sensor signal,

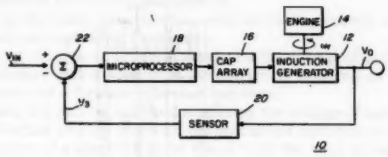
a controlled system responsive to said error signal and including means for generating an output signal representative of the operation of said controlled system, wherein said output signal is a relatively high frequency carrier signal having a relatively slowly varying envelope,

a feedback network responsive to said output signal and including sensor means for generating said sensor signal, said sensor means including:

A. selectively operative integrator means for generating an integrated signal representative of the integral of said carrier signal,

B. selectively operative reset means for resetting said integrator,

C. selectively operative analog-to-digital (A/D) means for generating a digital signal representative of said integrated signal, and



D. a controller switch operative during each cycle of said carrier signal including control means for sequentially:

i. enabling said integrator means during a predetermined portion of each cycle,

ii. enabling said A/D means,

iii. enabling said reset means,

and said digital signal corresponds to said sensor signal, wherein said controlled system is controlled on a cycle-to-cycle basis.

4,495,461

WAVEFORM CROSSING DETECTOR

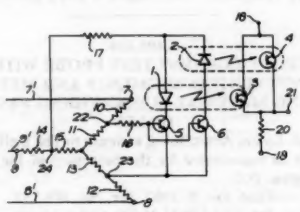
John E. Gilliam, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,364

Claims priority, application United Kingdom, Jun. 8, 1981, 8117495

Int. Cl.³ G01R *25/00*

U.S. Cl. 324—86 **16 Claims**



1. A circuit arrangement for detecting the instants at which the difference between voltages on first and second conductors of an alternating current supply pass through substantially zero in a given sense comprising: a photo-emissive semiconductor junction, a photo-sensitive element situated in a radiation path of said photo-emissive semiconductor junction, and a forward-current supply circuit for said photo-emissive semiconductor junction, said forward-current supply circuit having a control input connected between said first and second conductors and being arranged to supply said photo-emissive semiconductor junction with forward current in response to each passage of said difference through substantially zero in said given sense, said first and second conductors being first and second phase conductors respectively of a three-phase alternating current supply, circuit means providing an output current path of said supply circuit between a third phase conductor of said three-phase alternating current supply and one of said first and second phase conductors, said photo-emissive semiconductor junction being connected in said output current path between said forward-current supply circuit and said third phase conductor.

4,495,462

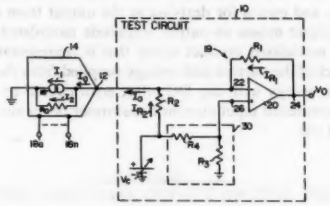
CURRENT SOURCE TEST CIRCUITRY

Thomas G. Weldon, Milpitas, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1983, Ser. No. 471,945

Int. Cl.³ G01R *19/18*

U.S. Cl. 324—120 **11 Claims**



1. An electronic circuit, comprising:

(a) means, coupled to an output of a current source device, for converting a current produced by such current source device into a corresponding voltage;

(b) a control voltage source; and,

(c) means, coupled to the output of the current source device and to the current-to-voltage converting means, for coupling a portion of the control voltage produced by the control voltage source to the output of the current source device with the voltage produced by the current-to-voltage converting means being substantially independent of the voltage produced by the control voltage source.

4,495,463

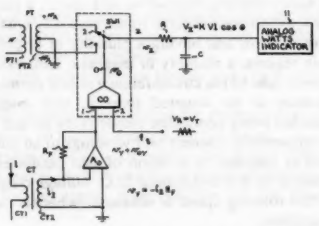
ELECTRONIC WATT AND/OR WATTHOUR MEASURING CIRCUIT HAVING ACTIVE LOAD TERMINATED CURRENT SENSOR FOR SENSING CURRENT AND PROVIDING AUTOMATIC ZERO-OFFSET OF CURRENT SENSOR DC OFFSET ERROR POTENTIALS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Feb. 24, 1982, Ser. No. 351,763

Int. Cl.³ G01R *21/06, 1/20*

U.S. Cl. 324—142 **24 Claims**



1. An electronic measuring circuit for measuring alternating current electrical energy, said measuring circuit having an active load terminated input current transformer with active load termination for deriving an input signal representative of the current supplied from a source of alternating current elec-

tric energy to be monitored and a voltage transformer for deriving an input signal representative of the voltage supplied from the source, electronic multiplier circuit means for multiplying together the signal representative of the current and the signal representative of the voltage, said electric multiplier circuit means comprising CMOS type electronic switches having first and second inputs and an output, comparator circuit means supplied with an input reference signal and with either of the signals representative of the current or voltage as a second input and for deriving at the output thereof a pulse width modulated signal representative of either the current or voltage that is supplied to the first input to said multiplier circuit means, the other of said current or voltage signals being supplied to the second input terminal of the multiplier circuit means, and means for deriving at the output from said multiplier circuit means an output amplitude modulated and pulse width modulated product signal that is representative of the product of the current and voltage supplied from the source of electric energy with any DC offset error caused by the active load terminated input current transformer being automatically zeroed out.

4,495,464

NON-CONTACTING, SPEED-DETECTING DEVICE OF A DIRECT-CURRENT GENERATOR TYPE

Yoshinori Kozai, Hino; Yoichi Amemiya, Hachioji, and Noboru Iwamatsu, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

PCT No. PCT/JP81/00234, § 371 Date May 13, 1982, § 102(e) Date May 13, 1982, PCT Pub. No. WO82/01074, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 17, 1981, Ser. No. 380,747

Claims priority, application Japan, Sep. 22, 1980, 55-130585

Int. Cl.³ G01P *3/48, 3/54*

U.S. Cl. 324—174 **5 Claims**

1. A non-contacting speed-detecting device of the direct-current generator type comprising a cylindrical permanent magnet rotor positioned for rotation within a stator, a plurality of stator winding wound on said stator, a permanent magnet for location positioned to rotate coaxially with said permanent magnet rotor and having a plurality of N pole regions and S pole regions, a plurality of magnetic induction switches positioned close to the circumference of said permanent magnet for location to be actuated thereby, said magnetic induction switches being connected respectively to said stator windings to sequentially connect said windings to an output when actuated in response to rotation of said permanent magnetic for rotation so that a stabilized D.C. voltage output proportional to the rotating speed is obtained, wherein the improvement comprises:

said permanent magnet for location being formed so that said N pole regions and said S pole regions alternate continuously around its circumference and have different circumferential widths, and the magnetic field applied to said magnetic induction switches is inverted steeply from one polarity to the other polarity as said magnetic rotates.

4,495,465

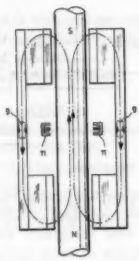
METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF MAGNETICALLY PERMEABLE BODIES USING A FIRST FLUX TO SATURATE THE BODY AND A SECOND FLUX OPPOSING THE FIRST FLUX TO PRODUCE A MEASURABLE FLUX

Frank G. Tomaiuolo, Unionville, and John G. Lang, Scarborough, both of Canada, assignors to Rotesco Inc., Scarborough, Canada

Filed May 3, 1982, Ser. No. 373,851

Int. Cl.³ G01N *27/72;* G01R *33/12*

U.S. Cl. 324—232 **42 Claims**



1. Apparatus for determining cross sectional area changes of a body part having magnetic permeability, said apparatus comprising a first magnetomotive force means for inducing a first magnetic flux to at least substantially saturate the body part giving rise to a flux distribution pattern determined by cross sectional area characteristics of the body part, a second magnetomotive force means for incuding a second magnetic flux generally opposing the first magnetic flux in a selected region of said flux distribution pattern outside of the body part such that any resultant magnetic flux in the selected region is at a readily measurable flux level while the body itself is maintained substantially saturated with the first flux and detecting means to monitor the flux in the selected region for detecting flux level variances indicative of such cross sectional area changes by comparative investigation along the body part.

4,495,466

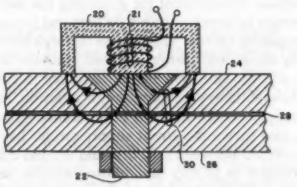
EDDY CURRENT TEST PROBE WITH CIRCUMFERENTIAL SEGMENTS AND METHOD OF TESTING MATERIAL SURROUNDING FASTENER HOLES

Kenneth M. Lakin, Ames, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1982, Ser. No. 366,732

Int. Cl.³ G01N *27/90;* G01R *33/12*

U.S. Cl. 324—242 **4 Claims**



1. A method of testing specimens with fastener holes in multi-layer material which may have sealant material between layers using an instrument comprising a cup core formed of high permeability material having an outer cylindrical wall and an inner center post with the outer wall being joined to the

center post at one end and the other end terminating with a rim so as to form an open end of a cup, the outer wall containing a plurality of equidistant openings extending completely through the outer wall, and along the cylindrical length from the rim to a plane perpendicular to the cylindrical axis through the outer wall, to thereby provide a plurality of segments in the form of peripheral posts around the outer wall, with a plurality of segments in each quadrant, with the segments having planes of symmetry through the cylindrical axis which have equal angles between them completely around the cylinder, there being a search coil wound around said center post, and a pick-up coil wound around each segment, the pick-up coils being substantially the same size and shape, at substantially the same location on the respective segments;

said method comprising the steps of:

exciting the center post winding with alternating current of a selected operating frequency;

scanning the pick-up coils and measuring the voltage of each individual pick-up coil with the instrument centered on a fastener of a flawless reference specimen;

scanning the pick-up coils and measuring the voltage of each individual pick-up coil with the instrument centered on a fastener of a specimen to be tested with the same excitation voltage; and

comparing the voltage of each individual pick-up coil with the corresponding voltage from the reference specimen whereby flaws in the specimen being tested are indicated by discrepencies between the two voltage readings and flaw orientation is determined by identification of the segment coil;

said frequency being lowered for testing deeper layers of material.

4,495,467

APPARATUS FOR SIMULTANEOUS MEASUREMENT OF MAGNETIC FIELD COMPONENTS IN MUTUALLY PERPENDICULAR DIRECTIONS

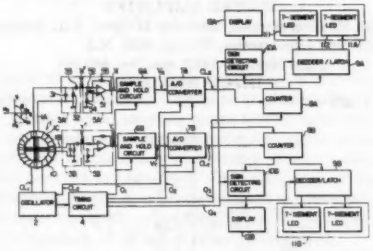
Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 23, 1981, Ser. No. 286,198

Claims priority, application Japan, Jul. 30, 1980, 55-104800

Int. Cl.³ G01R *33/02*

U.S. Cl. 324—244 **5 Claims**



1. A magnetic field measuring apparatus comprising:

a magnetic sensor for simultaneously generating a first and a second output signal respectively corresponding to components of a magnetic field in mutually perpendicular directions;

an oscillator circuit for generating excitation pulses for exciting said magnetic sensor and analog-to-digital conversion control pulses;

a timing circuit responsive to said oscillator circuit to generate first, second, third and fourth timing control signals;

a first and a second signal processing channel each including a resonant circuit resonant with one of said sensor output signals to generate a resonance output, an adjusting circuit for amplifying said resonance output to generate an adjusted output, a sample and hold circuit responsive to said first timing control signal to sample and hold said adjusted output and generate a holding signal, an A/D converter circuit responsive to said holding signal, said analog-to-digital conversion control pulses and said second timing control signal to generate a number of clock pulses proportional to said holding signal, a counter responsive to said third timing control signal to count said clock pulses to generate a count value, and a decoder/latch circuit responsive to said fourth timing control signal to latch said count value, and

a first and a second display respectively responsive to said decoder circuit to display digital outputs respectively corresponding to said mutually perpendicular field components.

4,495,468

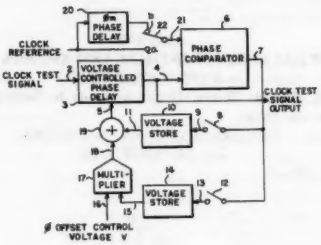
CONTROLLED PHASE OFF-SET DIGITAL TEST SYSTEM

Edward W. Richards, Fitchburg, and Paul T. Chang, Chelmsford, both of Mass., assignors to Tau-Tron, Inc., Chelmsford, Mass.

Filed Jan. 2, 1981, Ser. No. 221,988

Int. Cl.³ H03L *7/00;* **H03K** *5/26*

U.S. Cl. 328—155 **13 Claims**



1. A system for producing a clock output signal that is offset in phase with respect to a reference signal according to a clock phase offset control signal comprising;

(a) sources of clock and reference signals and clock offset control signal,

(b) a controlled variable phase shifter for shifting phase of the clock signal, producing a clock output signal,

(c) a phase comparator for comparing the phase shifted clock output signal with the reference signal producing a comparator output signal representative of the phase difference,

(d) a negative feedback circuit between the comparator output and the variable phase shift control and

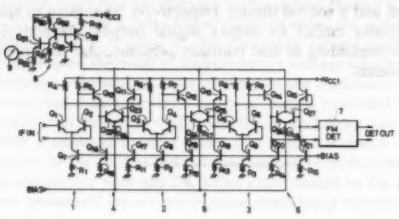
(e) means in said feedback circuit for multiplying feedback to the phase shifter by the off-set control signal,

(f) whereby the clock output phase offset is proportional to the offset control signal when the system is in equilibrium.

4,495,469
DIFFERENTIAL AMPLIFIER OUTPUT LEADING CIRCUIT, AND INTERMEDIATE FREQUENCY AMPLIFIER USING SAME

Tatsuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,328
Claims priority, application Japan, Nov. 17, 1981, 56-184053
Int. Cl.³ H03F 3/45
U.S. Cl. 330—2 8 Claims

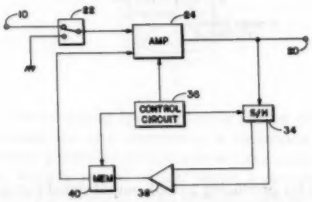


1. A differential amplifier output leading circuit, comprising: plural active elements, controlled electrodes of which are commonly connected; means for applying a pair of differential outputs of a differential amplifier respectively to control electrodes of said active elements, an output being led out of said commonly connected electrodes of said active elements; said applying means comprising a pair of emitter follower circuits receiving said pair of differential outputs as inputs thereof; and a pair of constant current sources constituting loads of said pair of emitter follower circuits, the emitter follower outputs of said pair of emitter follower circuit being applied to said control electrodes, respectively.

4,495,470
OFFSET BALANCING METHOD AND APPARATUS FOR A DC AMPLIFIER

Lloyd R. Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,284
Int. Cl.³ H03F 1/26
U.S. Cl. 330—9 9 Claims

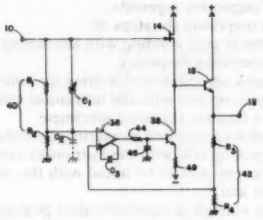


1. An offset balancing circuit for a differential DC amplifier, comprising:
- input switching means for selectively applying an input signal and ground potential to one input of said DC amplifier;
- polarity switching means for alternately switching the polarity of said DC amplifier between the normal and inverted states;
- detection means for detecting the output DC voltages from said DC amplifier in the normal and inverted states while applying the ground potential to one input of said DC amplifier; and
- control means for providing DC offset compensation voltage relating to the voltage difference between the output DC voltages from said detection means to the other input of said DC amplifier.

4,495,471
BUFFER AMPLIFIER

Ronald A. Barrett, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 19, 1983, Ser. No. 533,683
Claims priority, application Japan, Oct. 12, 1982, 57-177692
Int. Cl.³ H03F 3/16
U.S. Cl. 330—151 1 Claim

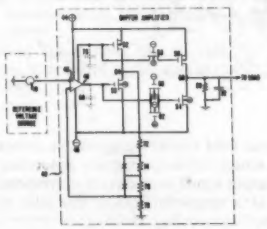


1. A buffer amplifier, comprising:
- a field effect transistor having a gate DC coupled to an input terminal;
- a bipolar transistor the principal current path of which is coupled in series with the source of said field effect transistor;
- an emitter follower transistor connected to the source side of said field effect transistor;
- an input divider connected to the input terminal;
- an output divider connected to the output end of said emitter follower transistor; and
- an operational amplifier for amplifying the voltage difference from said input and output dividers and providing the output thereof to the control electrode of said bipolar transistor.

4,495,472
STABLE FAST-SETTLING VOLTAGE REFERENCE BUFFER AMPLIFIER

Mirmira R. Dwarakanath, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 22, 1982, Ser. No. 443,194
Int. Cl.³ H03F 3/16
U.S. Cl. 330—277 5 Claims



5. A stable fast-settling buffer configuration comprising an amplifier having input and output terminals,
first and second stages decoupled from each other and responsive to a voltage appearing at said output terminal for providing identical output voltages at first and second node points, respectively, said second node point being adapted to be connected to a load,

and a feedback path connected between said first node point and the input terminal of said amplifier,

wherein said amplifier includes an additional input terminal to which a reference voltage source is adapted to be connected,

wherein said first and second stages comprise first and second source follower circuits, respectively,

wherein each of said first and second source follower circuits comprises a current source in series with the source-to-drain path of an MOS transistor,

wherein the output terminal of said amplifier is directly connected to the gate of the transistor in said first source follower circuit and is connected to the gate of the transistor in said second source follower circuit via a decoupling element,

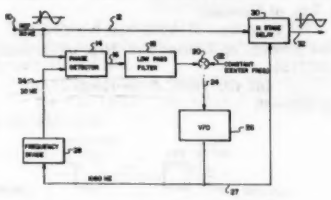
and wherein the current source in said second source follower circuit supplies a current that is N times that supplied by the current source in said first source follower circuit, where N is a positive number, and wherein the β of the transistor in said second source follower circuit is N times that of the transisitor in said first source follower circuit.

4,495,473

DIGITAL PHASE SHIFTING APPARATUS WHICH COMPENSATES FOR CHANGE OF FREQUENCY OF AN INPUT SIGNAL TO BE PHASE SHIFTED

Jan E. Treise, W. Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,678
Int. Cl.³ H03H *11/20*; H03L *7/06*
U.S. Cl. 331—10 **3 Claims**



1. Digital phase shifting means comprising, in combination:

first means for supplying a signal to be phase shifted;

time variable signal sampling means having signal and control input means and phase shifted output signal means and including sampled data serial delay storage means, the time between samples being a direct function of the frequency of the signal to be phase shifted and the total delay between input and output being inversely proportional to the frequency of the signal being phase shifted;

phase detecting means including first and second input means and output means;

means directly connecting said first means to said signal input means of said sampling means and to said first input means of said phase detecting means;

variable frequency oscillator means including control input means and variable frequency output means;

second means connecting said output means of said phase detecting means to said control input means of said oscillator means for varying the output frequency thereof from a quiescent center frequency; and

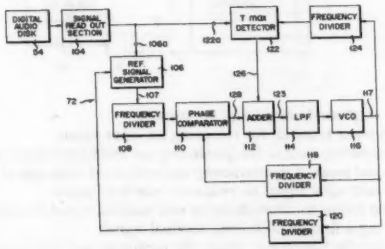
means for connecting said output means of said oscillator means to said control input means of said sampling means and to said second input means of said phase detecting means.

4,495,474

PLL CONTROL CIRCUIT FOR RECOVERY OF DATA FROM AUDIO DISK

Meisei Nishikawa; Yukio Nakamura, both of Yokohama, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 426,758
Claims priority, application Japan, Jun. 15, 1982, 57-102818
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—11 **8 Claims**



1. A phase locked loop control circuit for a reproduction system which reproduces an information signal digitally prestored in a recording medium such as an optical disk, said circuit comprising:

(a) oscillator means for oscillating at a given frequency to produce an oscillation signal from an output terminal thereof and for varying said oscillating frequency of the oscillation signal;

(b) signal generating means for generating a first electrical signal corresponding to a phase state of the readout digital information signal stored in said recording medium so as to hold its period values included in a range determined by minimum and maximum period values defined in accordance with a chosen modulation system;

(c) comparator means connected to said signal generating means and to the output terminal of said oscillator means, for receiving the first electrical signal and the oscillation signal respectively at first and second input terminals thereof to compare the first electrical signal with the oscillation signal, and for producing a second electrical signal from an output terminal thereof which corresponds to a phase difference between the first electrical signal and the oscillation signal;

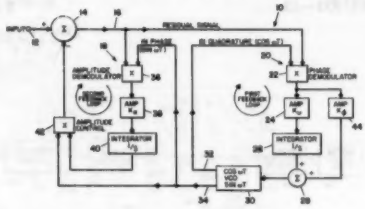
(d) detector means for extracting a specific period value from a readout information signal to detect the deviation between said specific period value and a period value obtained on the basis of the oscillation signal from said oscillation means and for generating a third electrical signal corresponding to the deviation at an output terminal thereof; and

(e) adder means connected to output terminals of said comparator means and said detector means, for receiving and adding the second and third electrical signals and for supplying sum data as an oscillation control signal to said oscillator means, whereby said oscillator means varies the oscillating frequency of the oscillation signal therefrom in response to the oscillation control signal to initiate an updated oscillation locking state.

4,495,475
RESIDUAL MODE PHASE LOCKED LOOP

John G. Mark, Pasadena; James R. Steele, Northridge, and Craig C. Hansen, East Palo Alto, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jan. 8, 1982, Ser. No. 337,920
Int. Cl.³ H03L 7/08; H03B 1/12; H04B 15/00; H03D 3/24
U.S. Cl. 331—12 11 Claims

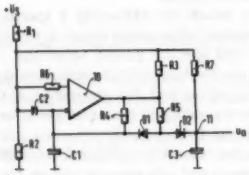


1. A phase locked loop, comprising;
an input terminal for receiving an input signal;
estimating means for producing an estimated input signal and means for subtracting said estimated input signal from said input signal to produce a residual signal;
first means for demodulating said residual signal for producing a first demodulated residual signal;
controlled oscillator means for receiving said first demodulated residual signal for producing first and second controlled oscillator signals in response to said first demodulated residual signal;
first feedback means for applying said first oscillator signal to said first means for demodulating;
second means for demodulating said residual signal for producing a second demodulated residual signal;
second feedback means for applying said secod oscillator signal to said second means for demodulating;
wherein said second oscillator signal and said second demodulated residual signal are applied to said estimating means for producing said estimated input signal; said residual signal being reduced to near zero.

4,495,476
SAWTOOTH VOLTAGE GENERATOR

Helmut Steinmann, Baden-Baden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00193, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02807, PCT Pub. Date Aug. 19, 1982
PCT Filed Nov. 6, 1981, Ser. No. 414,365
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105253
Int. Cl.³ H03K 3/023, 4/08
U.S. Cl. 331—111 9 Claims

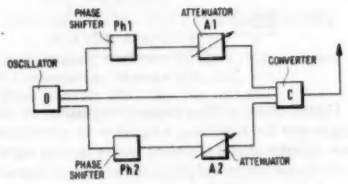


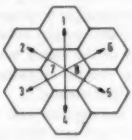
1. A sawtooth voltage generator, particularly for use as a clock and a reference voltage generator for an electronic regulating apparatus for a motor vehicle, having
a source of voltage (U_S);
means (10) coupled to the voltage source and providing a charging voltage;
and comprising
a first capacitor (C1);
a second capacitor (C3);
a common low-resistance charging resistor (R5) connecting the charging voltage providing means (10) to said first and second capacitors (C1, C3) to charge said capacitors to substantially the same charge voltage;
a first discharge circuit (R4) coupled to the first capacitor (C1) and to a reference voltage, and defining, with said first capacitor, a first discharge time constant;
a second discharging circuit (R7) coupled to the second capacitor and to a voltage which differs from said reference voltage level, and defining, with said second capacitor, a second discharge time constant;
means (D1, D2) effectively decoupling said first and second discharge circuits from each other and from said common charging resistor (R5);
and means deriving a sawtooth output voltage wave (Ua) having a wave form representative of the discharge wave form (U_C3) of said second capacitor (C3) and a time constant depending on the longest one of the discharge time constants,
to permit freely selecting the time constant of the sawtooth output voltage wave (U_A) and freely selecting the wave form of the sawtooth output voltage wave based on a discharge time constant of the second discharge circuit (R7) for the second capacitor, while permitting maintaining the cycling time constant or frequency of operation of the sawtooth output voltage wave (Ua) of the first discharge circuit (R4) of the first capacitor (C1).

4,495,477
MULTIPLE AMPLITUDE AND PHASE SHIFT KEYED SIGNAL MODULATION METHOD

Herbert Weber, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,386
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117134
Int. Cl.³ H03C 5/00; H04L 27/20
U.S. Cl. 332—10 4 Claims





BS	MS
1 0 0	1
1 1 0	2
0 1 0	3
0 1 1	4
0 0 1	5
1 0 1	6
0 0 0	7
1 1 1	8

1. In a multi-phase modulation method in which digital

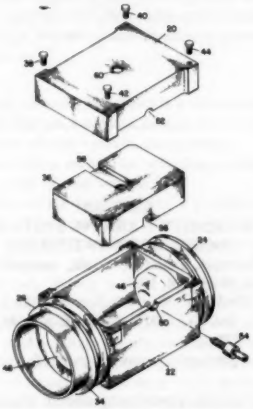
words each having a word length of k data bits control the generation of a modulated carrier in a manner such that each digital word value is associated with a particular amplitude and phase of the modulated carrier, and in which the modulated carrier is formed of a combination of three oscillating signals having identical frequencies, shifted in phase by 120° relative to one another, and each having a selected amplitude, the digital words being associated with the oscillating signals in such a manner that a first group of digital words is represented only by modulated carrier phases which possess equal angular spacings in the 360° phase plane and at least one further digital word is represented by a zero amplitude carrier formed by combining the three oscillating signals each having the identical selected amplitude or by suppressing all three oscillating signals, the improvement wherein: each digital word has a length of at least 3 bits; there is a plurality of further digital words each represented by a zero amplitude carrier, at least three bits of each further digital word differing from the corresponding at least three bits of each other further digital word; and said method comprises modulating the carrier in response to successive bits of each digital word for producing, during the period of each digital word, a first modulated carrier segment representing the digital word and two further modulated carrier segments representing redundant digital words derived from the digital word represented by the first modulated carrier segment and having values which permit error-free determination, during subsequent demodulation, of the digital word represented by the first modulated carrier segment.

4,495,478

CAVITY RESONATOR FOR ATOMIC FREQUENCY STANDARD

Tae M. Kwon, Thousand Oaks, and Howard E. Williams, Northridge, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 16, 1983, Ser. No. 467,061
Int. Cl.³ H01P *7/06*; H01S *1/06*; H03L *7/26*
U.S. Cl. 333—230 **11 Claims**



1. A cavity resonator for a vapor cell atomic frequency standard comprising, in combination:

(a) a substantially rectangular body having an internal cavity for supporting TE_{101} mode electromagnetic energy; and

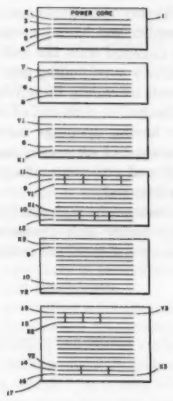
(b) means for preferentially orienting said TE_{101} mode electromagnetic energy.

4,495,479

SELECTIVE WIRING FOR MULTILAYER PRINTED CIRCUIT BOARD

Karl Hermann, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1982, Ser. No. 436,152
Int. Cl.³ H01P *3/18*
U.S. Cl. 333—238 **7 Claims**



1. A multilayer printed circuit board optimized for fabrication including:

at least one signal layer exclusively of short lines having a wide tolerance range for line dimensions and line-to-line spacings;

at least one signal layer exclusively of long lines, each long line being longer than each short line, having a tolerance range in line dimensions and line-to-line spacings narrower than said wide tolerance range;

at least one dielectric layer located between a signal layer of short lines and a signal layer of long lines;

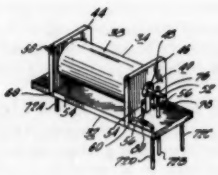
wherein the characteristic impedance and noise coupling coefficients of the short lines vary over a large range and the characteristic impedance and noise coupling coefficients of the long lines vary over a range smaller than said large range.

4,495,480

MULTIPATTERN ELECTRIC COMPONENT CONNECTING PIN BASE PLATE MOUNTING ASSEMBLY

George L. Martin, Bricktown, and Howard G. Melick, Toms River, both of N.J., assignors to Inresco, Inc., Brick, N.J.

Filed Dec. 17, 1981, Ser. No. 331,595
Int. Cl.³ H01H *1/06*
U.S. Cl. 335—199 **6 Claims**



1. An electronic component mounting assembly mounting an electronic component on a printed circuit board in operative connection with the circuit printed thereon, wherein said

printed circuit board has a first plurality of openings in a predetermined pattern, comprising:

a base plate having a plurality of holes therethrough formed in a pattern corresponding to said predetermined pattern of openings on said printed circuit board

an electronic component comprising a reed switch relay assembly mounted on said base plate, said reed switch relay assembly comprising

a hollow bobbin member,

a reed switch relay operatively contained within said hollow bobbin member and having switch contact end terminals extending outward from the ends of said bobbin,

a coil operatively surrounding said bobbin and having two terminal ends extending therefrom, and

end plates attached to each end of said bobbin member, said end plates having openings through which extend said switch contact end terminals, and means for positioning said switch and coil substantially parallel on and above said base plate; and

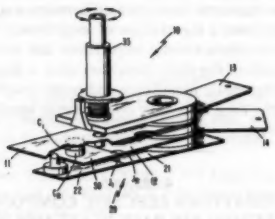
contact pins inserted through said respective base plate holes and having upper ends operatively connected to said switch contact end terminals and said terminal ends of said coil.

4,495,481

THERMOSTAT WITH BIMETAL COMPENSATING ELEMENT

Colin D. Hickling, Frankfort, and Marvin Barnes, Stamping Ground, both of Ky., assignors to Trigometer, Inc., Frankfort, Ky.

Filed Jun. 30, 1982, Ser. No. 393,810
Int. Cl.³ H01H *37/12, 37/52*
U.S. Cl. 337—349 **12 Claims**



1. A temperature responsive switch for consistent operation of a heating element or the like in a temperature range substantially above normal ambient temperature during all operating cycles comprising

a first contact mounted on a first spring member;

a second contact mounted on a second spring member for cooperation with said first contact and including a bimetal compensating portion positioned for heat transfer by convection from the heating element; and

means for engaging one of said spring elements to break said contacts;

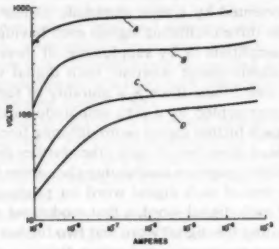
said bimetal compensating portion adapted to move said second contact toward engagement with said first contact in response to increasing temperature so as to compensate for any increase in temperature in said engaging means during cycling, whereby initial overshoot and variable contact weld size between the contacts is compensated and the desired temperature setting is maintained in a narrow range.

4,495,482

METAL OXIDE VARISTOR WITH CONTROLLABLE BREAKDOWN VOLTAGE AND CAPACITANCE AND METHOD OF MAKING

Herbert R. Philipp, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 295,901, Aug. 24, 1981, abandoned.
This application Jun. 16, 1983, Ser. No. 504,770
Int. Cl.³ H01C *7/12*
U.S. Cl. 338—21 **19 Claims**



1. A method for controlling the intrinsic capacitance and breakdown voltage of a body of sintered zinc oxide based varistor material, said body possessing at least two substantially planar, parallel surfaces for electrode attachment, said body nonetheless retaining the nonohmic voltage-current properties of said varistor material, said method comprising:

diffusing lithium into the bulk of said varistor material by applying, to at least one of said parallel planar surfaces of said varistor body, a composition containing lithium such that the lithium concentration thereon is less than 2 mg/cm^2, and then heating said varistor material at elevated temperatures for a time sufficient to cause diffusion of at least a portion of said lithium into said varistor body, whereby the intrinsic capacitance of said varistor material decreases and the breakdown voltage of said varistor body increases as the concentration of diffused lithium therein increases; and

attaching at least one electrode to said planar surface having said lithium composition applied thereto.

7. The varistor produced in accordance with the method of claim 1.

4,495,483

GROUND PROXIMITY WARNING SYSTEM WITH TIME BASED MODE SWITCHING

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 30, 1981, Ser. No. 259,131
Int. Cl.³ G01C *5/00;* **G01S** *9/04*
U.S. Cl. 340—970 **23 Claims**

1. A ground proximity warning system for aircraft comprising:

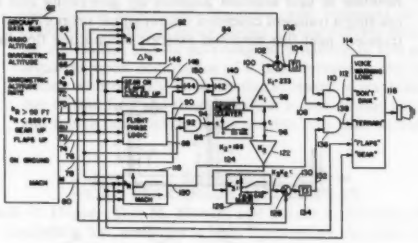
a source of signals representing aircraft flight parameters;

a source of a signal representing time;

a first warning mode means responsive to said flight parameter signals for generating a first warning signal in accordance with a first predetermined relationship between flight parameters;

a second warning mode means responsive to said flight parameter signals for generating a second warning signal

in accordance with a second predetermined relationship between flight parameters; and



means responsive to said time signal for switching from said first warning mode means to said second warning mode means as a function of time.

4,495,484

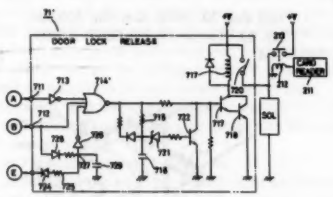
ALARMING APPARATUS OF VEHICLE

Shiro Kawakatsu, and Toshikazu Kawasaki, both of Suita, Japan, assignors to Daihatsu Motor Co., Ltd., Ikeda, Japan

Continuation of Ser. No. 149,717, May 14, 1980, Pat. No. 4,353,055. This application Jan. 7, 1982, Ser. No. 337,833

Int. Cl.³ B60Q *1/00*

U.S. Cl. 340—52 D **6 Claims**



1. A door lock releasing apparatus in a vehicle which vehicle includes a door and an auxiliary device for implementing an auxiliary function of said vehicle, comprising:

using state selecting means for selecting a using state or a non-using state of said vehicle,

state detecting means for detecting a predetermined undesired state of said auxiliary device, said predetermined undesired state being undesired in said non-using state of said vehicle,

door lock means having a door locked state operatively coupled to said door, and

door lock releasing means responsive to said state detecting means for said auxiliary device and said using state selecting means of said vehicle for automatically releasing said door locked state of said door lock means when said predetermined undesired state of said auxiliary device is not detected by said state detecting means and said non-using state is selected by said using state selecting means and for not automatically releasing said door locked state of said door lock means when said predetermined undesired state of said auxiliary device is detected by said state detecting means irrespective of whether said non-using state is selected by said using state selecting means.

4,495,485

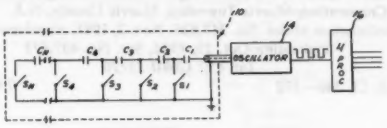
TOUCH CONTROL ARRANGEMENT FOR DATA ENTRY

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 215,998, Dec. 12, 1980, abandoned. This application Aug. 31, 1983, Ser. No. 528,075

Int. Cl.³ G08C *9/00*

U.S. Cl. 340—365 C **7 Claims**



1. A touch control arrangement for an appliance of the type incorporating a plurality of appliance operating components arranged for selective actuation in accordance with use generated input data, said touch control arrangement comprising:

touch responsive data entry means arranged for user actuation comprising a plurality of touch keys and a capacitive network including a plurality of capacitive elements operatively coupled to said touch keys;

oscillating means for generating a control signal at a plurality of discrete predetermined frequencies; each of said touch keys being uniquely associated with a different one of said plurality of predetermined frequencies, said capacitive network being coupled in tuning relationship with said oscillating means such that the frequency of said control signal is determined by the selective touching of said touch keys by the user; and

a microprocessor responsive to said control signal operative to control appliance operation in a manner determined by the frequency of said control signal.

4,495,486

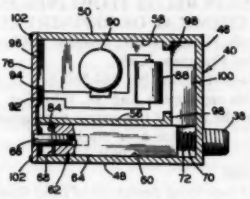
SIMPLIFIED ALARM FOR A SLIDING DOOR OR THE LIKE

John D. White, 3705 Brunswick Dr., Toledo, Ohio 43606

Continuation-in-part of Ser. No. 525,952, Aug. 24, 1983, Pat. No. 4,472,709. This application Jun. 29, 1984, Ser. No. 626,231

Int. Cl.³ G08B *13/08*

U.S. Cl. 340—546 **20 Claims**



1. A burglar alarm for a sliding door or the like comprising a rod member having one end adapted to engage one of a movable frame of the door and a stationary frame, a case located at the other end of said rod member, a plunger extending outwardly from said case and adapted to engage the other of said door frame and said stationary frame, resilient means urging said plunger outwardly toward the associated frame, an alarm system in said case comprising a source of power, signal means connected with said source of power, a pair of electrical contacts connected with said source and said signal means, said plunger having conductive means engageable with said contacts when said plunger moves further outwardly of said case under the force of said resilient means when the plunger is moved away from the associated frame to cause said power source to activate said signal means, and gravity-operated

means for preventing said plunger from being pushed inwardly into the case when said conductive means engages said electrical contacts.

4,495,487

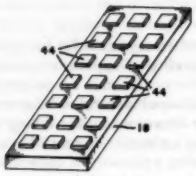
AMORPHOUS ANTIPILFERAGE MARKER

Sheldon Kavesh, Whippany; Gregory J. Sellers, Convent Station, and Wayne H. Witte, Stanhope, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 317,625, Nov. 2, 1981, abandoned. This application Oct. 27, 1982, Ser. No. 437,073

Int. Cl.³ G08B *13/26*

U.S. Cl. 340—572 **7 Claims**



1. For use in a magnetic theft detection system, a marker adapted to generate magnetic fields at frequencies that are harmonically related to an incident magnetic field applied within an interrogation zone and have selected tones that provide said marker with signal identity, said marker comprising an elongated, ductile strip of amorphous ferromagnetic material having a composition consisting essentially of the formula $Fe_aCr_bC_cP_dMo_eCu_fB_gSi_h$ where "a" ranges from about 71–79 atom %, "b" ranges from about 0–10 atom %, "c" ranges from about 13–15 atom %, "d" ranges from about 4–7 atom %, "e" ranges from about 0–2 atom %, "f" ranges from about 0–0.1 atom %, "g" ranges from about 0.5–2 atom % and "h" ranges from about 0–2 atom %, with the proviso that the sum (c+d+g+h) ranges from 19–24 atom % and the fraction c/(c+d+g+h) is less than about 0.84.

4,495,488

ULTRASENSITIVE APPARATUS AND POSITIONING METHOD FOR DETECTING CHANGE IN FLUID FLOW CONDITIONS IN RELIEF FLOWLINES ASSOCIATED WITH A CHEMICAL OR REFINERY COMPLEX

Stephen F. Streib, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 184,560, Sep. 5, 1980, Pat. No. 4,434,418. This application Aug. 18, 1982, Ser. No. 409,379

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.³ G08B *21/00*

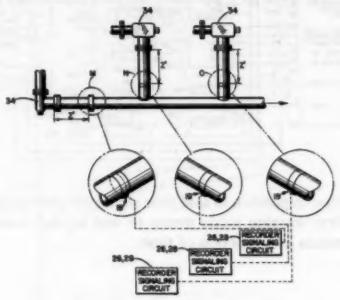
U.S. Cl. 340—606 **7 Claims**

1. Method of providing detection of fluid flow in a series of relief flowlines of a relief-flare system through activation of associated relief valves controlling discharge from process units of a chemical or refinery complex whereby sources of relief discharge therein can be pinpointed, comprising:

(a) positioning at least one of a series of transducer-meters for sensing heat flux in a selected location that is (i) radially disposed exterior to at least one of said flowlines in heat conducting contact therewith while maintaining integrity of said at least one flowline radially intact and (ii) linearly disposed along said one flowline closely adjacent to an associated relief valve so that fluid discharge through said relief valve can be accurately detected by said transducer-meter;

(b) for said one of said series of meters, continuously recording a base line signal constant with time but above a predetermined threshold level, said base line signal being indicative of a no-flow, steady state temperature condition within said at least one flowline at said selected location; and

(c) monitoring change in fluid flow interior of said one flowline at said selected location by generating and recording a transient cascaded output signal proportional to transient heat flux detected exterior of said one flowline,



said recorded transient signal deviating in amplitude from said prior recorded base line signal whereby said change in fluid flow can be accurately indicated thereby indicating the occurrence of said transient cascaded signal output so as to pinpoint location of relief discharge from one or more associated process units of said chemical or refinery complex.

4,495,489

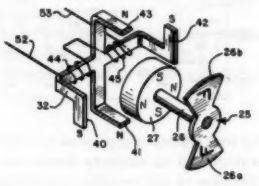
FAULT INDICATOR WITH IMPROVED FLAG INDICATOR ASSEMBLY

Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60118

Filed Jul. 20, 1982, Ser. No. 399,996

Int. Cl.³ G01R *19/16*; G08B *21/00*

U.S. Cl. 340—664 **17 Claims**



1. A fault indicator for indicating the occurrence of a fault current in an electrical conductor, comprising, in combination:

a housing;

status indicating means comprising an indicator flag rotatably mounted within said housing, said indicator flag having first and third positions corresponding to a reset state, and second and fourth positions corresponding to a fault-indicating state, said positions being consecutively spaced 90° about the axis of rotation of the indicator flag;

a flag actuator magnet rotatably coupled to said indicator flag, said actuator magnet having first, second, third and fourth magnetic poles of alternating magnetic polarity spaced 90° around said axis of rotation;

means comprising a magnetic pole piece having first, second, third and fourth magnetic pole segments extending from a common location to predetermined locations in magnetic communication with respective ones of said first, second, third and fourth poles of said flag actuator magnet; and

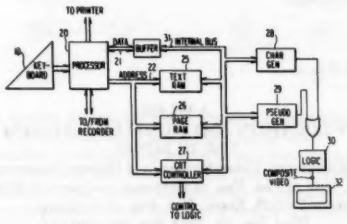
circuit means including a first magnetic winding on said first

pole segment and a second magnetic winding on said second pole segment, for conditioning said first and third magnetic pole segments to a first magnetic polarity, and said second and fourth magnetic pole segments to an opposite magnetic polarity during normal current flow in the conductor, and for reversing the polarities of said pole segments upon occurrence of a fault current in the conductor whereby said indicator flag is caused to rotate from one of said first and third positions to one of said second and fourth positions upon occurrence of a fault current.

4,495,490
WORD PROCESSOR AND DISPLAY

Beth R. Hopper; Dan M. Howell, and Robert A. Kolpek, all of Lexington, Ky., assignors to IBM Corporation, Armonk, N.Y.

Filed May 29, 1981, Ser. No. 268,609
Int. Cl.³ G09G 1/16
U.S. Cl. 340—709 **11 Claims**



1. A word processor comprising:

input means including a keyboard with a plurality of keys associated with different graphic or function including at least two cursor control keys, said input means producing a unique key code for each key or group of keys,

display means including a cathode ray tube for producing a visible image in response to a periodically repeating video signal and associated horizontal and vertical sync signals, said visible image including a cursor positioned in response to actuation of said cursor control keys,

control means responsive to said input means for manipulating and storing said unique key codes and for controlling said display means,

wherein the improvement comprises:

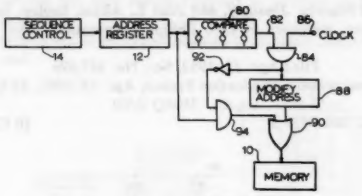
word underscore means in said control means responsive to one of said unique key codes for storing an underscore representation associated with each character of a word identified by the position of said cursor when said unique keycode is sensed.

4,495,491
METHOD FOR HIGHLIGHTING OF A REGION ON A DISPLAY SCREEN

Wolfgang Postl, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 191,680, Sep. 29, 1980, abandoned. This application Dec. 13, 1983, Ser. No. 561,125
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939457
Int. Cl.³ G09G 1/16
U.S. Cl. 340—709 **10 Claims**

1. A method of highlighting an image region within an image composed of image elements displayed on a display screen which can display said image elements in at least two levels of brightness, each said image element being individually targetable in positional relation to said image region comprising the steps of changing-over between a first mode of high-lighting and a second mode of highlighting, wherein said first mode comprises alternately displaying the image elements of the region to be emphasized in changed and unchanged condition, modifying the image content within the region to be highlighted during said changed condition, and wherein said second mode comprises alternately displaying the image elements of the region to be emphasized in changed and a different

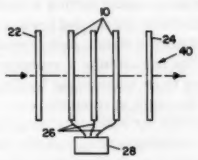


unchanged condition, and modifying the image content within the region to be highlighted during said changed condition of said second mode differently from that in said first mode, and effecting said changing-over automatically in response to a predetermined condition of said image content.

4,495,492
MAGNETO-OPTIC CHIP WITH GRAY-SCALE CAPABILITY

Robert H. Anderson, Long Beach; William E. Ross, Woodland Hills, and Theodore R. Maki, Northridge, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,321
Int. Cl.³ G09G 3/34
U.S. Cl. 340—783 **3 Claims**



1. A magneto-optic display system to achieve gray-scale comprising:

(a) first and second generally planar magneto-optic chips; each of said magneto-optic chips includes:

(1) a registration surface normal to the direction of light passage through said chip,

(2) a plurality of pixel areas in which individual ones of said pixel areas can exhibit one state of at least three magnetic states: a first state magnetized totally in one direction where said one direction is normal to said registration surface and parallel with said direction of light passage, a second state magnetized totally in an opposite direction to said one direction, and a third state magnetized both in said one direction and in said opposite direction so that said third state is demagnetized or stripped out, and

(3) means to electrically address individual ones of said pixel areas and place a selected pixel area in a respective one of said three magnetic states;

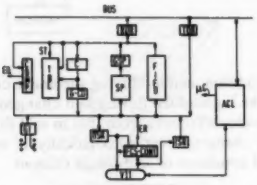
(b) said first and second magneto-optic chips positioned adjacent to each other in a tandem relationship with respective ones of said first chip pixel areas in alignment with associated ones of said second chip pixel areas so that the associated amount of light passage through said selected pixel area as determined by its magnetic state has one of three corresponding levels of light passage thereby developing a desired degree of gray scale.

4,495,493

METHOD OF CONTROLLING THE TRANSMISSION/RECEPTION OF DATA IN A LOCAL COMMUNICATION NETWORK, AND DATA TRANSMISSION SYSTEM FOR PERFORMING THE METHOD

Gerard Segarra, Jossigny, and Jean L. Allain, Saclay, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,696
Claims priority, application France, Apr. 15, 1981, 81 07558
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.5 **10 Claims**



7. A local data communication network, comprising a plurality of transmitter/receiver stations, each of which is connected to a transmission medium for the transport of data, said stations forming a logic communication loop, each station having its own address and comprising an address indicator, each station further comprising:

allocation means for allocating the right to transmit to that station when its own address corresponds to the address indicated by its address indicator;

transmission means for transmitting a single message, said transmission means having a control output connected to said allocation means and being activated under control of said allocation means, said transmission means being provided for transmitting a presence message if no information has to be transmitted by that station when it is allocated the right to transmit;

each of said address indicators being provided with incrementing means for incrementing them by one position by an end-of-message indication of the message transmitted by the station having the right to transmit; each of said address indicators being further provided with resetting means for resetting them when each of said stations has had the right to transmit; said data communication network comprising a pilot station, said pilot station comprising an inactive-time counter for measuring the duration of the inactivity of a station having the right to transmit and for generating a substitution message when the inactive-time counter exceeds a predetermined value.

4,495,494

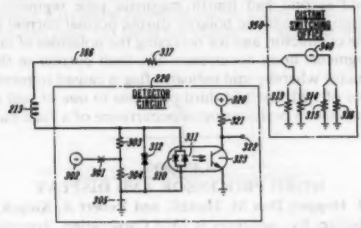
DETECTOR CIRCUIT FOR COMMUNICATION LINES

Robert F. McCune, Sandwich, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1981, Ser. No. 308,911
Int. Cl.³ H04M *3/22*
U.S. Cl. 340—825.06 **10 Claims**

7. A detector circuit for use in a communication line having a plurality of operative modes and having first and second resistances for each of said modes; said circuit comprising:

a network connected only serially to said line and having a first branch having a pair of serially connected resistors and a second branch parallel to said first branch and having a pair of oppositely poled light-emitting devices; and



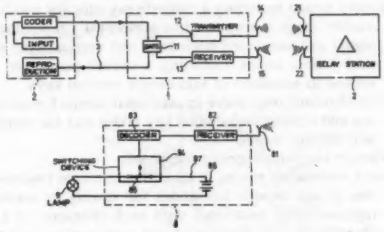
switch means for selectively controlling current applied to said network for particular ones of said plurality of operative modes.

4,495,495

STAFF-LOCATION AND SIGNALLING SYSTEM FOR USE IN MINES

Siegfried Ormanns, Gelsenkirchen, and Helmut Neumann, Dortmund, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,017
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3101542
Int. Cl.³ G08B *5/22*
U.S. Cl. 340—825.45 **19 Claims**



1. A staff-location and signalling system for operation in a mine, comprising:

at least one base station adapted to be located in the mine area and comprising a transmitter for transmitting radio signals;

at least one first signal receiver;

at least one secondary wave-guide adapted to extend through at least part of the mine area for transmitting radio signals between said at least one base station and said first signal receiver at a distance therefrom;

a miner's lamp adapted to be carried by a person in the mine area;

the first signal received being associated with said lamp and adapted to respond to coded radio signals transmitted by said at least one base station; and

a normally-closed working-current circuit connecting said associated miner's lamp to a source of working current;

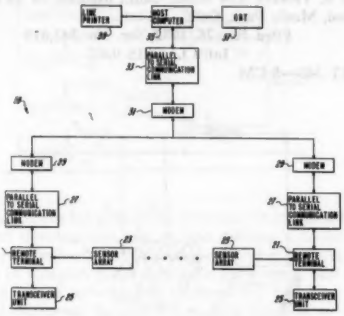
said at least one first signal receiver being adapted to open and close said circuit so that the miner's lamp can be switched off and on in accordance with said coded radio signals.

4,495,496

PERSONNEL MONITORING AND LOCATING SYSTEM

Scott A. Miller, III, Boulder, Colo., assignor to Johnson Engineering Corp., Boulder, Colo.

Filed Dec. 15, 1981, Ser. No. 330,976
Int. Cl.³ H04Q 9/00; G08G 1/01
U.S. Cl. 340—825.54 25 Claims



1. A system for monitoring a plurality of movable objects within a preselected area, said system comprising:

a plurality of transmitting means at said preselected area;

control means connected with said plurality of transmitting means to cause each of said plurality of transmitting means to provide an interrogation pulse output at predetermined times;

a plurality of transponder means each of which is associated with and constrained to movement with a different one of said movable objects, with said plurality of transponder means being capable of simultaneously receiving said interrogation pulse output from said plurality of transmitting means, and with each of said transponder means, responsive to receipt of said interrogation pulse output from said transmitting means, providing a reply output with said reply output from each of said transponder means being delayed by different predetermined time intervals so that all reply outputs from said transponder means occur at different time intervals with respect to one another; and

signal processing means for providing an output indicative of the particular transponder means from which a reply output was received to thereby enable monitoring of the objects associated with said transponder means.

4,495,497

CIRCUIT ARRANGEMENT FOR CONTROLLED INTERCONNECTION OF SIGNAL SOURCES AND SIGNAL DESTINATIONS

Kálmán Molnár, Munich, Fed. Rep. of Germany, assignor to National Semiconductor Corporation, Santa Clara, Calif.

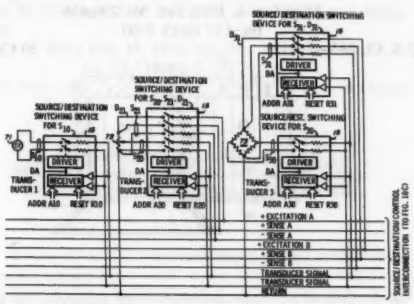
Filed Jan. 7, 1982, Ser. No. 337,895
Int. Cl.³ H04Q 9/00; G08C 15/06
U.S. Cl. 340—825.63 7 Claims

1. A remote data system for selectively connecting signal source to destination devices including:

a transmission line;

a source/destination switching device coupled to each of said signal source and destination devices and including transmission line connection means, switch means coupled to said transmission line connection means, pulse responsive receiver means coupled to said transmission line connection means, driver means coupled between said receiver means and said switch means, detect and decode means connected to said receiver, register means responsive to said detect and decode means, comparator means responsive to said register means and including an address comparator a general enable decoder and a reset decoder, first gate means responsive to said address comparator said general enable decoder said reset decoder and said transmission detect and decode means, first and second flip flop means adapted to be activated by said first gate means, and second gate means responsive to said first and second flip flop means coupled to activate said driver means;

a control signal generator adapted to transmit control pulses; and



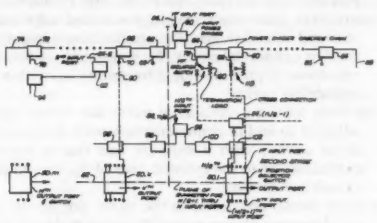
a control signal switching device adapted to be actuated by said control signal generator and coupling said control signal generator to said transmission line to transmit a control signal; thereby providing control means responsive to pulses from said control signal generator for enabling said source/destination switching devices to connect selected signal source and destination devices to said transmission line.

4,495,498

N BY M PLANAR CONFIGURATION SWITCH FOR RADIO FREQUENCY APPLICATIONS

Peter G. Petrelis, Huntington Beach, and John A. Alexander, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 2, 1981, Ser. No. 317,046
Int. Cl.³ H04Q 1/00
U.S. Cl. 340—825.79 22 Claims



1. A radio-frequency switch of planar construction for connecting N input signals selectively to M output circuits, where N and M are integers, said switch comprising:

a substrate having first and second faces;

an output stage having M output switches arrayed in a row on said first face of said substrate, each of said output switches having N input ports and one output port;

an input stage having N input ports connected respectively to N power distribution means, each of said power distribution means having elements distributed on said first face of said substrate, along one of N rows practically parallel with said row of output switches, and each of said power distribution means having M output ports; and

electrical conductor means connecting said output ports of

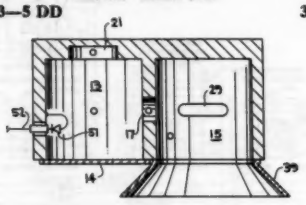
said power distribution means with said input ports of said output switches, said conductor means being disposed on said second face of said substrate wherever necessary to avoid intersection with said power distribution means.

4,495,499

INTEGRATED OSCILLATOR-DUPLEXER-MIXER

David Richardson, 2588 Knightsbridge La., Santa Clara, Calif. 95050

Filed Sep. 8, 1981, Ser. No. 299,656
Int. Cl.³ G01S 9/00
U.S. Cl. 343—5 DD **30 Claims**



16. Integrated oscillator-duplexer-mixer apparatus for sensing the distance of an object or for frequency or phase modulated two-way communication, the apparatus comprising:

a grounded, metal body having a front face and a first cylindrical cavity closed at the cavity front and rear ends, with cylinder axis substantially perpendicular to the front face of the body, with the front end of the cavity terminating on or adjacent to the front face of the body and the rear end of the cavity terminating within the body;

the body having a second cylindrical cavity at the side of and adjacent to, and having a cylinder axis substantially parallel to the axis of, the first cylindrical cavity, with the front end of the second cavity being open and terminating on the front face of the body and the rear end of the second cavity terminating within the body;

the body having a third substantially cylindrical cavity, communicating with the first and second cylindrical cavities in the interior of the body, having a cylinder axis that is substantially parallel to the front face of body, and having a cylinder diameter that is no more than 25% of the first cylindrical cavity, with the third cavity cylinder axis being positioned substantially equidistant from the rear end and the front end of the first cylindrical cavity;

microwave generating means, positioned adjacent to the rear end of and in electromagnetic communication with, the first cylindrical cavity, for generating electromagnetic vibrations of predetermined frequency ω_O within the first cylindrical cavity;

the body having a cylindrical mixer slot cavity, positioned adjacent to and in communication with the second cylindrical cavity, with a cylinder axis that is substantially perpendicular to the cylinder axes of the second and third cylindrical cavities;

a mixer diode, positioned in the mixer slot cavity, and oriented to sense electromagnetic vibration signals propagating within the slot cavity, for sensing the presence of two or more distinct electromagnetic vibration signals and for forming the product signal of such distinct signals;

low pass filter means, electrically connected to the mixer diode, for receiving the mixer diode product signal and allowing the passage only of product signals with resulting frequencies less than some predetermined threshold frequencies, $\omega_T \leq 2\pi \times 10^8$ rd/sec, in response to receipt of n electromagnetic vibration signal of arbitrary frequency components from the mixer diode;

horn means, mechanically attached to the body and communicating with the second cylindrical cavity at the front end of the cavity, for limiting the direction of radiation emitted from or received by the cavity; and

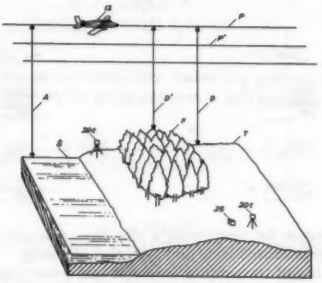
resonant cavity frequency dynamic variation means, electromagnetically communicating with the first cylindrical cavity, for varying the predetermined frequency ω_O associated with the cavity in a controlled, time-varying manner.

4,495,500

TOPOGRAPHIC DATA GATHERING METHOD

Roger S. Vickers, Los Altos, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Jan. 26, 1982, Ser. No. 342,819
Int. Cl.³ G01S 9/02
U.S. Cl. 343—5 CM **3 Claims**



3. A method for acquiring data for use in producing a computer generated topographic map of foliage covered terrain comprising the steps of overflying the terrain along a flight path, directing at the terrain while traversing the flight path a first radar pulse at a first frequency and a second radar pulse at a second frequency that is greater than the first frequency so as to produce a plurality of first signals representative of the distance from points along the flight path to the terrain surface and a plurality of second signals representative of the distance from points along the flight path to the foliage surface, measuring the distance of the points along the flight path above a preselected reference plane to derive plural altitude signals, generating location coordinate signals representative of the location of the points along the flight path relative to the terrain, producing a continuous series of timing pulses recurring at preselected time intervals for affording correlation with the points along the path, simultaneously recording the first, second, altitude and coordinate signals and timing pulses on a recording medium measuring temperature and pressure on the terrain surface to produce a ground temperature signal and a ground pressure signal, and recording the ground temperature signal and the ground pressure signal with a standard time signal to afford subsequent input of the data on the recording medium and the ground temperature and pressure signals to a computer in time correlation for generation of a topographic map of the terrain.

4,495,501

METHOD AND MEANS FOR PROVIDING FREQUENCY AGILE OPERATION OF MTI RADAR

Durwood L. Creed, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1982, Ser. No. 373,084
Int. Cl.³ G01S 13/52, 13/24
U.S. Cl. 343—7.7 **6 Claims**

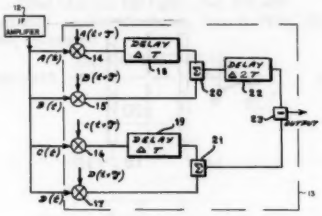
3. A frequency agile MTI radar comprising r.f. pulse generating means for generating an r.f. pulse train,

modulating means modulating the pulses of said r.f. pulse train to the effect that successive groups of four pulses taken as sets of pairs of pulses are frequency modulated such that the frequency of one of the pulses of the two

pairs of pulses is constrained to make the pulse pairs have equal difference frequencies,

transmitting means for transmitting said r.f. pulse train,

receiving means for receiving a return r.f. pulse train echo, and



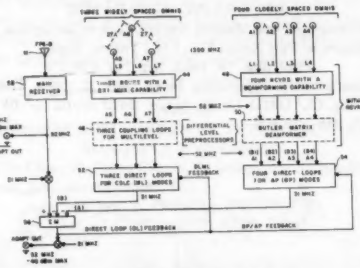
processing means for processing the received r.f. pulse train echo to develop first and second difference frequency signal responsive to the frequency difference between the pulses of received pulse train echo pulse pairs, said processing means subsequently differencing said first and second difference frequency signals to provide an MTI output.

4,495,502

MULTIPLE LOOP SIDELOBE CANCELLER

Raymond J. Masak, East Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,042
Int. Cl.³ G01S *3/16, 3/28*
U.S. Cl. 343—380 **10 Claims**



1. A space tapered multiple jammer sidelobe canceller comprising first and second subsystems for use in a system having a main system for receiving desired and interfering electromagnetic wave energy from a given angular region of space, and main system having a main beam forming antenna and a main receiving means coupled to the main antenna;

said first subsystem comprising a first array of antenna elements, widely spaced several wavelengths between any two elements, and a first unit comprising a plurality of adaptive loops coupled to said antenna elements of the first array;

said second subsystem comprising a second array of antenna elements, closely spaced on the order of one wavelength or less between adjacent elements, and a second unit comprising a plurality of adaptive loops coupled to said antenna elements of the second array; and

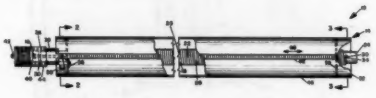
combining means having inputs from said main receiving means, from said first unit and from said second unit, for summing the signals for generating a system output and adaptive control loop feedback signals supplied on leads to the first and second units, said adaptive control loop feedback signals being used to form in said adaptive loops the generation of cancellation signals in response to correlation between interfering signals appearing in the subsystems and the same interfering signals appearing in said main system.

4,495,503

SLOW WAVE ANTENNA

William H. Morman, 2311 Telemark, NW., Rochester, Minn. 55901

Filed Feb. 19, 1982, Ser. No. 350,481
Int. Cl.³ H01Q *1/36, 13/18*
U.S. Cl. 343—746 **8 Claims**



1. Antenna for an RF communications device comprising:

a. means providing a slow wave structure for radio frequency energy and connected to said communications device, said slow wave structure being symmetrical about an axis and including means of a distributed capacitance and distributed inductance; and,

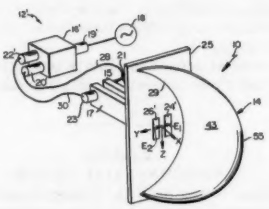
b. continuously slotted cylindrical means for varying the driving point impedance of said slow wave structure by varying the ratio of said distributed capacitance to said distributed inductance and adjustably slidable and positioned about said axis of said slow wave structure means by a dielectric washer at each end thereof whereby said slotted cylindrical varying means changes said distributed capacitance thereby providing an antenna having a length less than an equivalent free space length.

4,495,504

RADIO FREQUENCY ANTENNA HAVING A REFLECTOR WITH AN EDGE IN A PATTERN NULL REGION TO REDUCE EDGE SCATTERING

Donald H. Archer; Michael A. Gilbert; Robert H. Loomis, and Michael J. Maybell, all of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 2, 1983, Ser. No. 471,552
Int. Cl.³ H01Q *19/17*
U.S. Cl. 343—779 **4 Claims**



1. A radio frequency antenna, comprising:

(a) a feed for producing an antenna pattern having a pair of radiating lobes with a null region between such radiating lobes; and

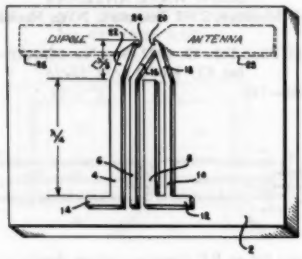
(b) a reflector having a surface disposed to intercept a portion of the antenna pattern and an edge disposed in the null region.

4,495,505

PRINTED CIRCUIT BALUN WITH A DIPOLE ANTENNA

Michael W. Shields, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 10, 1983, Ser. No. 493,387
Int. Cl.³ H01Q 9/16; H01P 5/10
U.S. Cl. 343—821 **6 Claims**



1. An improved printed circuit balun comprising:
a dielectric substrate,
first, second, third and fourth spaced conductive strips each having a first and second end and disposed in parallel in an uninterrupted numerical order upon a surface of said substrate,
a first conductive member connected to the first end of said first conductive strip,
a second conductive member connected to the first end of said third and fourth conductive strips,
said first end of said second conductive strip and said first and second conductive members providing a means for connecting an unbalanced transmission line to said balun,
a pair of balanced output lines,
a third conductive member connected between the second end of said first conductive strip and one of said pair of balanced output lines,
a fourth conductive member connected between the second end of second conductive strip and the other one of said pair of balanced output lines, and
a fifth conductive member connected between the second end of said fourth conductive strip and the other of said pair of balanced output lines.

2. Apparatus as defined in claim 1 wherein the lengths of said conductive strips are one quarter wavelength of the center frequency applied to said balun.

3. Apparatus as defined in claim 2 wherein the length of said third, fourth and fifth conductive members do not extend more than one eighth wavelength of the center frequency of said balun beyond the end of said conductive strips.

4. Apparatus as defined in claim 3 wherein the width of said second conductive strip differs from that of said first and third conductive strips.

5. Apparatus as defined in claim 4 and further including a printed circuit dipole antenna connected to said pair of output lines.

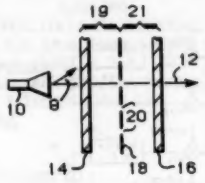
4,495,506

IMAGE SPATIAL FILTER

Bill H. Sasser, Tempe; Scott H. Walker, Scottsdale, and Raymond G. Immell, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1982, Ser. No. 365,842
Int. Cl.³ H01Q 15/02
U.S. Cl. 343—909 **6 Claims**

1. An image spatial filter comprising:
a first dielectric sheet;
a second dielectric sheet substantially parallel to and spaced from said first dielectric sheet;
a ground plane between, substantially parallel to and separated from said first and second dielectric sheets;
coupling means defined by said ground plane for coupling energy from one side of said ground plane to another side thereof; and



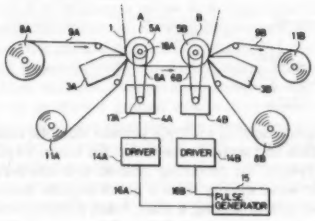
spacing means for maintaining said spaced apart and substantially parallel relationship between said first and second dielectric sheets and said ground plane.

4,495,507

MULTICOLOR TRANSFER HEAT-SENSITIVE RECORDING APPARATUS

Fujio Moriguchi, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,076
Claims priority, application Japan, Jan. 20, 1982, 57-6133
Int. Cl.³ G01D 15/10, 15/24; B41J 31/02, 17/08
U.S. Cl. 346—76 PH **2 Claims**

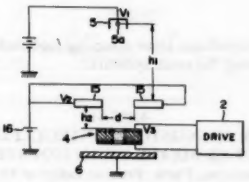


1. A multicolor transfer heat-sensitive recording apparatus comprising at least two recording stations where images are recorded in different colors, respectively, each recording station including a thermal recording medium for thermal transfer recording, conveying drive means for auxiliary scanning at the associated recording station, a recording sheet which is conveyed through said recording stations in a predetermined order, and a thermal head for selectively heating said thermal recording medium according to a video signal, to transfer an ink image onto said recording sheet, said conveying drive means in one of said recording stations being a stepping motor which carries out an ordinary stepping operation, and said conveying drive means in the other recording stations being a mini-angle stepping motor which conducts a mini-angle stepping operation and which can adjust rotational periods thereof.

4,495,508
ELECTROSTATIC REPRODUCING APPARATUS

Noriyoshi Tarumi, Hachioji; Haruo Iwahashi, Fussa; Masahiko Matsunawa, and Hiroshi Tokunaga, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,209
Claims priority, application Japan, Nov. 5, 1980, 55-154632; Dec. 1, 1980, 55-168068
Int. Cl.³ G01D 15/06
U.S. Cl. 346—159 3 Claims



1. In an electrostatic reproducing apparatus of the type comprising an ion modulating electrode having a control electrode and a common electrode formed as a unit with said control electrode through an insulating layer, and having at least one aperture therethrough, a charge retaining drum positioned at one side of said ion modulating electrode, an ion generator arranged at the other side thereof, and a source of voltage applied to said ion generator, wherein the passing of ions through said aperture is controlled according to an electric control signal applied to said control electrode, the improvement comprising another electrode having a throughhole larger than said aperture, spaced from and coaxial with said ion modulating electrode, and a voltage source lower in absolute value than the voltage applied to said ion generator applied to said other electrode, whereby ions passing through said ion modulating electrode are condensed.

4,495,509
MICROENCAPSULATION BY INTERCHANGE OF MULTIPLE EMULSIONS

Hung-Ya Chao, Williamsville, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,477
Int. Cl.³ B01J 13/02; B32B 27/42
U.S. Cl. 346—215 25 Claims

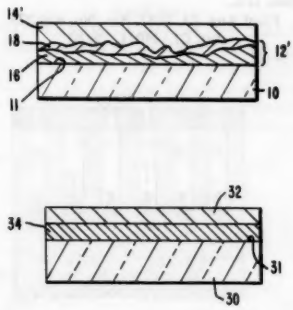
1. A method of making microcapsules having generally continuous polymeric walls comprising the following steps:
(a) preparing a first organic-in-aqueous emulsion comprising a first organic solution having a first oil soluble reactive material dissolved therein and a first aqueous emulsification solution;
(b) preparing a second organic-in-aqueous emulsion comprising a second organic solution having a second oil soluble reactive material dissolved therein and a second aqueous emulsification solution; and
(d) mixing said organic-in-aqueous emulsions such that said oil soluble reactive materials react to form said microcapsules.

13. Microcapsules having generally continuous polymeric walls prepared by a method comprising the following steps:
(a) preparing a first organic-in-aqueous emulsion comprising a first organic solution having a first oil soluble reactive material dissolved therein and a first aqueous emulsification solution;
(b) preparing a second organic-in-aqueous emulsion comprising a second organic solution having a second oil soluble reactive material dissolved therein and a second aqueous emulsification solution; and
(d) mixing said organic-in-aqueous emulsions such that said oil soluble reactive materials react to form said microcapsules.

4,495,510
IMPROVED SUPERCONDUCTOR/SEMICONDUCTOR JUNCTION STRUCTURES

John A. Roth, and Lynette B. Roth, both of Oxnard, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 199,163, Oct. 22, 1980, Pat. No. 4,395,813.
This application Nov. 29, 1982, Ser. No. 444,939
Int. Cl.³ H01L 27/12
U.S. Cl. 357—5 10 Claims



1. A superconductor/semiconductor junction device having optimized low-temperature current transport properties formed by the process comprising the steps of:
(a) providing a substrate of a chosen semiconductor material having an atomically clean surface;
(c) depositing on said clean surface of said substrate to a first predetermined thickness a layer of a chosen reactive material which is capable of undergoing an interfacial reaction with a first selected superconducting material to form a second selected superconducting material;
(c) depositing on said layer of said chosen reactive material a layer of said first selected superconducting material to a second predetermined thickness whereby said second superconducting material is formed by the reaction of said chosen reactive material with said first selected superconducting material and serves as an interfacial reaction barrier to prevent reaction between said surface of said substrate and said first selected superconducting material to form an undesired non-superconducting material that would degrade said current transport properties of said structure; and
(d) providing contact means connected to said layer of said first selected superconducting material for deriving an electrical output from said device.

3. A superconductor/semiconductor junction device having optimized low-temperature current transport properties formed by the process comprising the steps of:
(a) providing a substrate of a chosen semiconductor material having an atomically clean surface;
(b) depositing on said clean surface of said substrate a layer of a first selected superconducting material to a first predetermined thickness;
(c) depositing on said layer of said first selected superconducting material to a second predetermined thickness a layer of a second selected superconducting material which is capable of reaction with said semiconductor material of said substrate to form an undesirable non-superconducting material, whereby said layer of said first selected superconducting material serves as an interfacial reaction barrier to prevent said reaction between said surface of said substrate and said second selected superconducting mate-

rial which would produce said undesirable non-superconducting material which would degrade said current transport properties of said structure; and

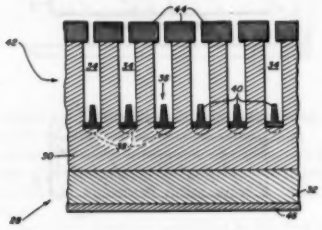
(d) providing contact means connected to said layer of said second selected superconducting material for deriving an electrical output from said device.

4,495,511

PERMEABLE BASE TRANSISTOR STRUCTURE

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,229
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **10 Claims**



1. An improved permeable base transistor (PBT) structure comprising:

an n^+-type semiconductor material substrate;

a metal ohmic emitter/cathode/source contact fashioned to the bottom of said n^+-type semiconductor material substrate;

an n-type semiconductor material epitaxially grown on the top of said n^+-type semiconductor material substrate so as to configure a plurality of trenches in said n-type semiconductor material, said n-type semiconductor material including a plurality of implantation regions fashioned therein at the bottom of corresponding ones of said plurality of trenches, said implantation regions being formed after bombardment of said n-type semiconductor material with ions selected to render said implantation regions semi-insulating;

a control grid structure including a plurality of Schottky metal control grid elements operatively emplaced contiguously to corresponding ones of said plurality of implantation regions; and

a collector/anode/drain structure including a plurality of Schottky metal collector/anode/drain contacts deposited on the top surface of said n-type semiconductor material, said collector/anode/drain contacts being deposited during the fabrication of said control grid structure.

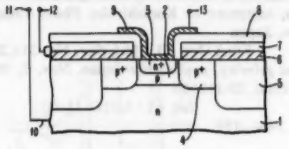
4,495,512

SELF-ALIGNED BIPOLAR TRANSISTOR WITH INVERTED POLYCIDE BASE CONTACT

Randall D. Isaac, and Tak H. Ning, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,740
Int. Cl.³ H01L *23/48, 29/46, 29/72*
U.S. Cl. 357—34 **3 Claims**

1. A self-aligned bipolar transistor structure having a metal silicide layer covering the extrinsic base region about an aperture defining the emitter and intrinsic base region characterized by:



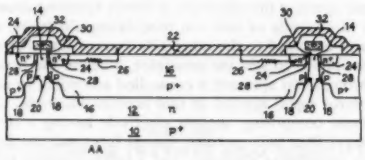
a doped polysilicon layer covering said metal silicide layer and having the same aperture.

4,495,513

BIPOLAR TRANSISTOR CONTROLLED BY FIELD EFFECT BY MEANS OF AN ISOLATED GATE

Bernard Descamps, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 14, 1982, Ser. No. 388,500
Claims priority, application France, Jun. 16, 1981, 81 11835
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—43 **6 Claims**



1. A semiconductor structure of the bipolar conduction type controlled by an isolated gate which is adapted to render said structure selectively conductive or to block the same, comprising :

a semiconductor substrate doped with an impurity having a conductivity of a first type, said substrate constituting an emitter area of a vertical bipolar transistor formed in said structure,

an emitter contact electrically connected to said substrate,

an epitaxial layer slightly doped with an impurity having a conductivity of a second type opposite to the conductivity of said first type, which epitaxial layer covers said substrate and constitutes a base area of said bipolar transistor,

a collector area having a conductivity of said first type and strongly doped from the surface of said epitaxial layer in its major portion, said collector area being surrounded by an area wherein said epitaxial layer of second type conductivity is exposed and said collector area being covered on the major portion of its surface with a collector contact;

a source area constituted by a zone doped from the surface of said epitaxial layer with an impurity having a conduction of said second type, said doped zone being included within said collector area and extending along a border thereof while exposing an interval between said area and said zone, a thin isolating layer covering said interval, and a conductive layer covering said thin isolating layer, so as to constitute the control gate of said structure, and

a resistive source access zone connected, on the one hand, to said source area and, on the other hand, to said collector contact, the resistance of said zone being sufficiently high to prevent the junction constituted between the source area and the collector area from being rendered conductive when a current passes through the collector.

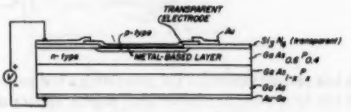
4,495,514
TRANSPARENT ELECTRODE LIGHT EMITTING DIODE AND METHOD OF MANUFACTURE

David J. Lawrence, Rochester; Daniel C. Abbas, Webster; Daniel J. Phelps, Rochester, and Frank T. J. Smith, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 239,798, Mar. 2, 1981,. This application Jul. 28, 1983, Ser. No. 517,568

Int. Cl.³ H01L *27/12, 33/00, 23/48, 29/40*

U.S. Cl. 357—67 **2 Claims**



1. In a light emitting diode structure having a semiconductor light emitting surface, the improvement comprising

a continuous transparent metal-based layer formed on said surface and having a thickness of between about 15 and 100 angstroms; and

a transparent electrode formed on said metal-based layer and wherein such light emitting diode structure was annealed after formation of said transparent metal-based layer and said transparent electrode to reduce the resistance between said surface and such transparent electrode.

4,495,515
ELECTRICALLY ISOLATING TWO PIECE MOUNTING WASHER ARRANGEMENT

Gani Pamiello, Little Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 26, 1982, Ser. No. 401,943

Int. Cl.³ H01L *23/02, 23/12*

U.S. Cl. 357—81 **12 Claims**

1. A mounting arrangement for mounting a power transistor package on a circuit chassis comprising;

a first mounting washer constructed of a material having high relative permittivity electrical insulating properties and low thermal resistance heat conduction properties and futher having a perimeter outline shape conforming to a perimeter outline of a body of the power transistor package to be mounted on top of the first mounting washer and further including an anchoring hole in register with a first anchor hole of the transistor package,

a second mounting washer constructed of a material having high relative permittivity, electrical insulating properties and having an anchoring hole in an electrode of the transistor package and further including means for positively engaging the first mounting washer, said means for engaging operative to prevent relative twisting of the first and second mounting washers and further operative to maintain the anchoring holes a fixed distance apart,

the first and second mounting washers being mounted coplanar with each other and positioned between the power transistor and the circuit chassis with the first mounting washer located exclusively under the body of the power transistor package and the second mounting washer under the electrode of the power transistor.

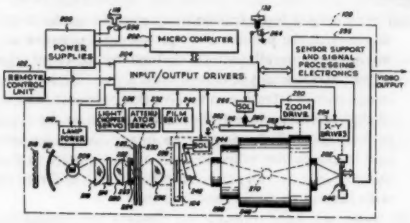
4,495,516
FILM VIDEO PLAYER HAVING FLASH ILLUMINATED AREA IMAGE SENSOR AND SINGLE FRAME CCD IMAGE SENSOR FOR USE THEREWITH

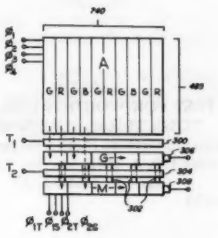
Leslie G. Moore, and Te-Hsung Lee, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,426

Int. Cl.³ H04N *9/11*

U.S. Cl. 358—54 **7 Claims**





1. A film video player for scanning color negative film to produce a color video signal, comprising:

(a) film gate means for holding the color negative film;

(b) a solid state area image sensor responsive to control signals for producing color video signals, comprising:

(1) a charge coupled device area array having rows and columns of image sensing elements, responsive to scene light for producing photosignals, and

(2) an array of color filters disposed over said image sensing array,

(c) means for flash illuminating the film in said film gate during the vertical retrace intervals of said video signals;

(d) means for projecting an image of said film in said film gate onto said image sensor;

(e) control signal generating means for supplying said image sensor with control signals to produce said color video signals at a standard video field rate; and

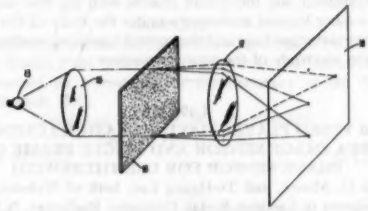
(f) signal processing means responsive to the color video signals produced by said image sensor for inverting said color video signals to produce positive color video signals.

4,495,517

PRINTING SCREEN AND METHOD OF MAKING SAME

Frank A. Sportelli, 7 Redwood Court, Glen Cove, N.Y. 11542

Division of Ser. No. 090,763, Nov. 2, 1979, Pat. No. 4,283,471.
This application Aug. 3, 1981, Ser. No. 289,602
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 3 Claims



1. In a television transmission process, the method comprising:

(a) providing a light transmitting element made in accordance with the process of (i) providing a negative screen having an overall pattern defined by rows of closely spaced substantially square-shaped areas, (ii) providing an image carrier effective to receive three separate exposures of said overall pattern at the same location on the negative screen, and (iii) developing an image screen pattern on said image carrier wherein each of said plurality of exposures of said overall pattern is effected at a different angle with respect to each other, and then

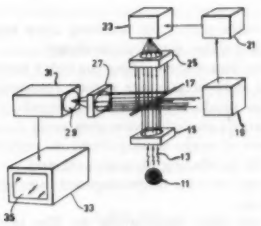
(b) using said light transmitting element for transmitting a reproduced image.

4,495,518

INFRARED TEST FOR WOODEN UTILITY POLES FOR STRUCTURAL SOUNDNESS

Corigan Sanoian, 682 Orchard Pkwy., Niagara Falls, N.Y. 14301

Filed Oct. 6, 1982, Ser. No. 433,002
Int. Cl.³ H04N 5/23
U.S. Cl. 358—113 10 Claims



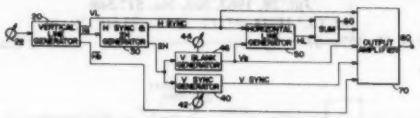
1. A method for testing a wooden utility pole for structural soundness which comprises receiving infrared radiation from a wooden utility pole being tested, converting the infrared radiation received to visually observable form, comparing by means of such visually observable form radiation received from different locations along the length of the utility pole, and noting disparities therein, which are indicative of portions of the pole which may be structurally unsound.

4,495,519

TEST PATTERN GENERATORS

Clayton C. Wahlquist, West Valley City, Utah, assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 30, 1982, Ser. No. 393,569
Int. Cl.³ H04N 7/02
U.S. Cl. 358—139 30 Claims



1. A test pattern generator for generating a test pattern signal which can be applied to a raster scan display apparatus having first and second mutually orthogonal scanning directions to cause the apparatus to display a test pattern consisting of a first set of spaced lines oriented in said first direction and a second set of spaced lines oriented in said second direction, said test pattern generator comprising:

a first pulse generating circuit for generating at least a first pulse train and a second pulse train, said first pulse train including, between successive pulses of said second pulse train, a number of pulses equal to the number of lines in said first set;

a second pulse generating circuit for receiving said second pulse train and generating at least a first sync pulse train;

a third pulse generating circuit connected to the second pulse generating circuit for generating a second sync pulse train and a fifth pulse train; and

a fourth pulse generating circuit connected to the second and third pulse generating circuits for generating a sixth pulse train in response to the first sync pulse train and the fifth pulse train, the sixth pulse train including, between successive pulses of the fifth pulse train, a number of pulses equal to the number of lines in said second set, and each pulse of the sixth pulse train being in a predetermined timed relation to a pulse of the first sync pulse train,

whereby pulse trains from said pulse generating circuits may be combined to form a test pattern signal.

4,495,520

TELEVISION CAMERA VIDEO LEVEL CONTROL SYSTEM

Marvin Kravitz, Princeton Junction; Larry A. Freedman, East Brunswick; Elmer H. Fredd, Yardville, and Dan E. Denef, Freehold, all of N.J., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 9, 1982, Ser. No. 367,132
Int. Cl.³ H04N 5/14
U.S. Cl. 358—219 2 Claims

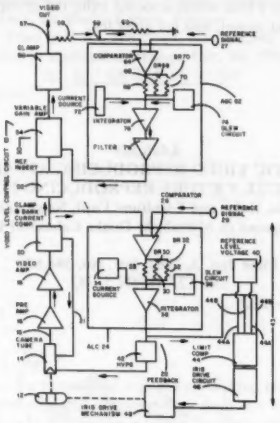
1. A video level control system for providing a normalized video signal representing a scene including:

first means for providing light images of a scene and controlling the intensity of admitted light from the scene;

second means including a camera tube responsive to the light images provided by the first means for converting the light images of a scene into electrical signals, and for conditioning the electrical signals;

third means responsive to the electrical signals provided by the second means for providing a normalized video signal by altering the electrical signals of the second means through automatic gain control as a function of the signal remaining after clipping a pre-selected area percentage of

the scene that exceeds a pre-set reference when scene luminance is in a first illumination range; and



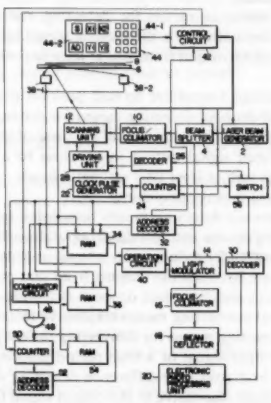
fourth means for controlling the first and second means so that a normalized video signal is provided when scene luminance is above the first illumination range.

4,495,521

ELECTRONIC COPYING APPARATUS

Chiaki Nagoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 195,425, filed as PCT JP/00171, Jun. 30, 1979, § 102(e) date Mar. 13, 1980, abandoned.
This application Sep. 22, 1982, Ser. No. 421,280
Claims priority, application Japan, Jul. 13, 1978, 53-85627
Int. Cl.³ H04N *1/38, 1/40*
U.S. Cl. 358—256 **3 Claims**



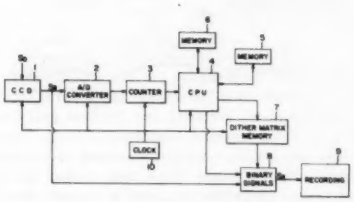
1. An electronic copying apparatus comprising:
optical scanning means for scanning an original;
photo-electric converting means for converting light reflected from the original into an electric signal;
data generating means including random access memory means for storing data for insertion or deletion on a copy;
first memory means for storing electric signals from said photo-electric converting means;
second memory means for storing data signals from said data generating means random access memory, said second memory means having substantially the same memory capacity as said first memory means;
a single address designating circuit producing an address signal which is supplied to said first and second memory means to commonly designate addresses for said first and second memory means;
means for processing data read out from said first and second memory means;
keyboard means for generating indications of address locations on said copy at which data stored in said random access memory means is to be inserted or deleted;
data transfer control means including means for comparing said address signal from said single address designating circuit and said indications from said keyboard means and generating a comparison signal when detecting that an address corresponding to said address signal resides in a range defined by said indications of address locations, and means for sequentially addressing locations in said random access memory means in synchronism with changes in the output of said single address designating circuit in response to said comparison signal thereby permitting data to be sequentially transferred from said data generating means random access memory means to said second memory means;
light modulating means for modulating incident light in accordance with an output signal of said processing means; and
electronic photographic processing means for disposing an image in accordance with said modulated incident light on said copy.

4,495,522

RECORDING APPARATUS AND METHOD OF PICTURE IMAGE

Masahiko Matsunawa, and Yoshinori Abe, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,638
Claims priority, application Japan, Jul. 7, 1981, 56-105030; Sep. 3, 1981, 56-137722
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **4 Claims**



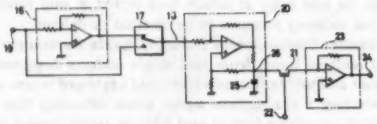
1. In a method of recording a picture image by converting picture signals into binary signals using a matrix which has a plurality of threshold values with a predetermined frequency distribution arrayed according to a predetermined order and recording the picture according to the binary picture signals, the improvement wherein a plurality of matrix groups with different frequency distributions of threshold values are prepared, the picture to be recorded is divided into a plurality of picture regions to obtain picture density data for each of the regions, matrices corresponding to the picture density data detected for each of the regions are selected among said plurality of matrix groups, and the picture signals are converted into binary signals using said selected matrices.

4,495,523

SIGNAL PROCESSING UNIT FOR ORIGINAL READING DEVICE

Takashi Ozawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1983, Ser. No. 459,556
Claims priority, application Japan, Jan. 22, 1982, 57-7456
Int. Cl.³ H04N *1/10, 3/14, 5/21*
U.S. Cl. 358—293 **5 Claims**



2. An original reading device of the type having light sensing elements connected to a signal line through MOS transistors, whereby a light sensing element is charged when an MOS to which it is connected is turned on, the charging representing light intensity on said light sensing element and being detected on a signal line, said original reading device comprising:

first and second signal lines for connection to said elements via a corresponding number of said MOS transistors to which said elements are respectively connected;

said number of MOS transistors being arranged in alternating groups of at least two MOS transistors per group, said groups being alternately connected to said first and second signal lines such that all MOS transistors in any group are connected to the same signal line and all MOS transistors in the next succeeding group are connected to the other signal line; and

a differential amplifier means, having its inputs fed with the signals on said first and second signal lines, for providing an output signal;

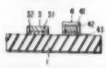
means for integrating said output signal of said differential amplifier to remove noise in said output signal.

4,495,524

PART FOR A SLIDE VARIABLE RESISTOR

Takeshi Kakuhashi, and Hiroshi Tahara, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 21, 1983, Ser. No. 506,267
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—314 **4 Claims**



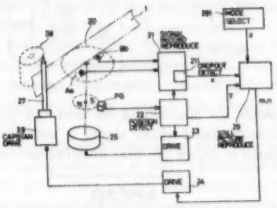
1. A part for a slide variable resistor, adapted for a slide terminal to be slid along the surface thereof, having a film resistive layer comprising a main resistive layer pattern formed by electroplating a thin metal resistor on an insulated support and a protective resistive layer pattern coated on said main resistive layer, wherein said protective resistive layer pattern has a larger sheet resistivity than said main resistive layer pattern, and wherein said protective resistive layer pattern is formed of an abrasion-resistant material selected from the group consisting of (1) a paste comprising (a) an electrically conductive powder selected from the group consisting of a carbon powder, silver powder, and nickel powder; and (b) a thermosetting resin, and (2) a paste comprising (a) a noble metal selected from the group consisting of gold, palladium, and silver, (b) a base metal selected from the group consisting of copper and nickel, and (c) glass frit.

4,495,525

MAGNETIC VIDEO REPRODUCING APPARATUS HAVING STILL PICTURE REPRODUCING FUNCTION

Ryohei Uchida, Kobe, and Toshifumi Fujii, Nagaokakyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,670
Int. Cl.³ H04N *5/782*
U.S. Cl. 360—10.3 **8 Claims**



1. A magnetic video reproducing apparatus employing a rotational plural-head system including at least two video heads, a helical scan system and an azimuth system, comprising:

capstan driving means,

position detecting means for detecting and producing an output indicative of the positions of said at least two magnetic heads,

dropout detecting means for detecting and producing an output indicative of a decrease in signal level of a reproduced signal output from said at least two magnetic heads, and

control means responsive to said position detecting means and said dropout detecting means for driving said capstan driving means for causing said decrease of the level of said reproduced signal output to be close to a change over between said at least two magnetic heads,

said control means comprising:

time difference detecting means responsive to said position detecting means and to said dropout detecting means for detecting and producing an output indicative of a time difference between the outputs from said position detecting means and from said dropout detecting means,

time period converting means responsive to said time difference detecting means for converting the output therefrom to an output signal of a time period associated with said output from said time difference detecting means, and

driving means responsive to the output signal from said time period converting means for driving said capstan driving means,

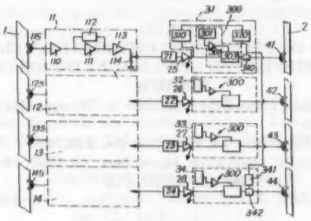
said driving means adapted for determining the driving amount of said capstan driving means responsive to the time period of the output signal from said time period converting means,

said time period converting means producing a period for its output signal adapted to cause the decrease of the signal level of said reproduced signal output to be close to said change over between said at least two magnetic heads.

4,495,526
METHOD AND APPARATUS FOR IDENTIFYING SOUND RECORDINGS

Dimitri Baranoff-Rossine, Paris, France, assignor to Societe Scome-France, La Roche Guyon, France

Filed Oct. 25, 1982, Ser. No. 436,348
Claims priority, application France, Oct. 28, 1981, 81 20250
Int. Cl.³ G11B *5/86, 15/04*
U.S. Cl. 360—15 **18 Claims**



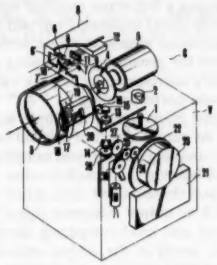
1. Method for identifying a sound recording, recorded on at least one track of a recording medium such as a magnetic tape and consisting in associating a coded auxiliary signal with the sound information signal, wherein the auxiliary signal is introduced during an individual recording operation of the sound information signal on the final recording medium, from the readout of a master tape on which, both the sound information signal and an end-of-sequence signal inserted between two sequences of program of the sound information signal have been recorded beforehand, the auxiliary signal being constituted by a coded digital signal derived from a pilot frequency and incremented at each detection of an end-of-sequence signal when the master tape is read out, and in mixing the auxiliary signal with the sound information signal while recording the sound information signal on the final recording medium in such a way as to inscribe the auxiliary signal repeatedly throughout the whole recording, the coded digital auxiliary signal being derived from a pilot frequency F which corresponds to a basic frequency f situated in a range outside the spectrum of audible frequencies towards the ultrasounds multiplied by a factor equal to the ratio of the advancing speed of the individual medium of final recording during the individual recording operation, to the advance speed of the individual medium of final recording during normal readout thereof.

4,495,527
VIDEO RECORDING SYSTEM WITH FOCUSING DEVICE

Susumu Kozuki; Masaya Maeda, and Hiroyuki Takimoto, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,897
Claims priority, application Japan, Mar. 5, 1981, 56-31888
Int. Cl.³ H04N *5/782*
U.S. Cl. 360—33.1 **9 Claims**

1. A video system comprising:
(A) a video camera including:
image pickup means for transducing a photo-image to an electrical signal;
a lens system for projecting an image of an object to be photographed onto an image receiving surface of said image pickup means; and
a lens moving mechanism for moving said lens system;
(B) a video signal recording apparatus including:
recording means for recording video signals corresponding to the electrical signal on a recording medium;
a medium moving mechanism for moving said recording medium; and
an electric motor for generating driving torque to move said moving mechanism;
(C) connecting means for mechanically connecting said video camera and said recording apparatus directly with each other; and

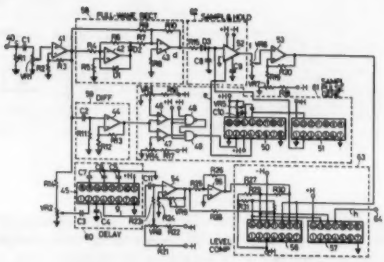


(D) transmission mechanism forming means for mechanically transmitting the driving torque to said lens moving means when said connecting means connects said video camera to said recording apparatus.

4,495,528
MAGNETIC REPRODUCING SYSTEM FOR A DIGITAL SIGNAL

Kohhei Sasamura, Sagamihara, and Masaru Moriyama, Yamato, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jul. 2, 1982, Ser. No. 394,942
Claims priority, application Japan, Jul. 10, 1981, 56-107938; Oct. 13, 1981, 56-163123
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 **6 Claims**



1. A magnetic reproducing system for a digital signal, for reproducing a recording two-valued code signal from a magnetic recording medium, and detecting the signal level of the reproduced signal to reproduce a digital signal of a desired two-valued code, said recording two-valued code signal being obtained by passing said digital signal of said desired two-valued code through a converter and delay means and then feeding back this digital signal to said converter to carry out a modulo-2 addition, said magnetic recording medium being recorded with said recording two-valued code signal, said magnetic reproducing system comprising:
a magnetic head for reproducing said two-valued code recorded on said magnetic recording medium;
an equalizer for performing wave-equalization of the signal reproduced by said magnetic head; and
a signal detection circuit for detecting the signal level of a three-valued code signal obtained from said equalizer, to produce a two-valued detection signal in which signal levels corresponding to "+1" and "−1" of said three-valued code signal is set to a signal level "+1" and a signal level corresponding to "0" of said three-valued code

signal is set to a signal level "0", as a reproduced output signal of said digital signal,

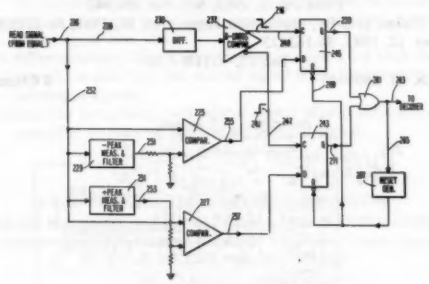
said signal detection circuit comprising a full-wave rectifier for producing a full-wave rectified signal from the three-valued code signal obtained from said equalizer, sampling pulse generation means supplied with said three-valued code signal for generating a sampling pulse with a phase substantially corresponding to peak value positions of the signal levels corresponding to "+1" and "−1" of said three-valued code signal, a sample and hold circuit for sampling an output signal of said full-wave rectifier with an output sampling pulse of said sampling pulse generation means and holding the sampled value, a delay circuit for delaying said three-valued code signal so as to match the timing with an output reference signal of said sample and hold circuit, and level comparing circuit means for comparing the levels of the output reference signal of said sample and hold circuit and a delayed three-valued code signal obtained from said delay circuit, to obtain a two-valued code signal having a waveform substantially identical to the digital signal of said desired two-valued code.

4,495,529

QUALIFIER CIRCUIT

Roy W. Gustafson, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 7, 1982, Ser. No. 375,933
Int. Cl.³ G11B 5/09, 5/02
U.S. Cl. 360—46 **1 Claim**



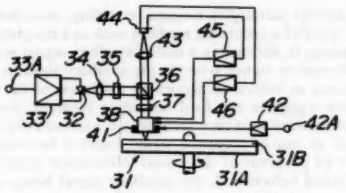
1. Qualifier circuitry means for determining whether or not a signal generated by a read head associated with a magnetic recording medium is a qualified signal as compared with noise and the like comprising in combination: input circuitry means formed to receive non-differentiated pulse signals from said read head; first and second peak measuring circuitry connected to said input circuitry means and each formed to detect and average peak values of said non-differentiated signals received by said input circuitry means and each further formed to generate a different peak reference signal; first and second signal comparison means connected to said input circuitry means to receive said non-differentiated pulse signals and further respectively connected to said first and second peaks measuring circuitry to receive respectively therefrom said peak reference signals and each of said signal comparison means formed to generate a valid signal when the amplitude peak of a non differentiated signal exceeds the amplitude of a said reference signal with which it is compared; signal differentiation circuitry connected to said input circuitry means to differentiate said non-differentiated pulse signals and provide differentiated signals therefrom; zero crossover circuitry coupled to said differentiation circuitry to receive said differentiated signals and formed to generate a leading edge signal virtually coincident with associated zero crossover of said differentiated signals; first logic circuit means having at least first and second input signal means and an output signal means and connected to said zero crossover circuitry and some first signal comparison means and formed to provide a first qualified signal in response to the simultaneous presence of a leading edge signal and a valid signal respectively at said last mentioned first and second input signal means; and second logic circuit means having at least first and second input signal means and an output signal means and formed to provide a second qualified signal in response to the simultaneous presence of a leading edge signal and a valid signal respectively at said last mentioned first and second input signal means.

4,495,530

METHOD OF PROCESSING INFORMATION SIGNAL WITH RESPECT TO OPTO-MAGNETIC RECORD MEDIUM

Tuneo Yanagida, Hino, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Nov. 25, 1981, Ser. No. 324,764
Claims priority, application Japan, Nov. 26, 1980, 55-165322
Int. Cl.³ G11B 5/02
U.S. Cl. 360—59 **16 Claims**



1. In a method of processing an information signal with respect to an opto-magnetic record medium which has an easily magnetizable axis perpendicular to its surface and has been uniformly magnetized in one direction, in order to erase an information signal which has been recorded in the record medium along one or more tracks by inverting the direction of magnetization in accordance with the information signal, the improvement in said method comprising:

heating at least a part of the track containing the information signal to be erased by uniformly irradiating said part with an unmodulated light beam to a temperature at which said part substantially attains a paramagnetic condition; and

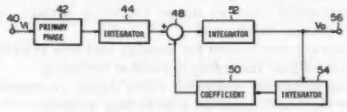
applying to said part an erasing magnetic field having a direction such that said part is uniformly magnetized in a direction opposite to said one direction so as to erase the information signal in said part of the track.

4,495,531

EQUALIZER CIRCUIT FOR SIGNAL WAVEFORM REPRODUCED BY APPARATUS FOR MAGNETIC DIGITAL DATA RECORDING AND PLAYBACK

Kouhei Sasamura, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 8, 1983, Ser. No. 473,375
Int. Cl.³ G11B 5/45, 5/02
U.S. Cl. 360—65 **8 Claims**



1. An apparatus for equalizing the waveform of a signal reproduced from a magnetic recording medium, comprising:

a phase circuit for varying a phase of a signal passing therethrough;

an adder circuit for processing the reproduced signal whose waveform is to be equalized;

a first integrator circuit for integrating an output signal of said adder circuit and varying an integration time constant thereof;

a second integrator circuit for integrating an output signal of said first integration circuit; and

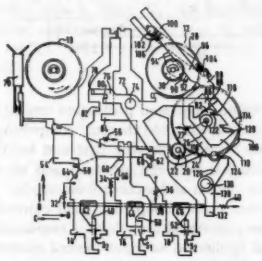
a coefficient circuit for adjusting the level of an output signal of said second integrator circuit and supplying an output signal thereof to the adder circuit, the adder circuit processing the reproduced signal and the output signal of said coefficient circuit.

4,495,532

TAPE PLAYER

Takamasa Kurafuzi, and Kimihide Tokura, both of Kouhoku, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 9, 1983, Ser. No. 465,097
Claims priority, application Japan, Feb. 9, 1982, 57-19270
Int. Cl.³ G11B *15/02, 15/18*
U.S. Cl. 360—71 **20 Claims**



1. A tape player with operating mode changing mechanism, comprising:

a chassis;

means for running a tape, said tape running means being supported on said chassis;

a first rotary member adapted to rotate while the tape runs;

thrusting means driven by rotation of said first rotary member;

holding means formed on said chassis;

a rocking member held by said holding means and provided with first and second engagement portions, said first engagement portion being engagable with said thrusting means,

said rocking member making a first movement relative said holding means in response to said thrusting means thrusting said first engagement portion during running of the tape; and

a second rotary member adapted to rotate regardless of running of the tape and movable between first and second positions to move said rocking member into different positions, said second rotary member being provided with an engagement section for engaging with said second engagement portion of said rocking member,

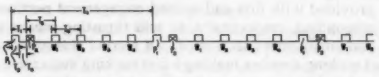
said second engagement portion of said rocking member being prevented from engaging with said second engagement section of said second rotary member during said first movement of said rocking member, but engaging with said second engagement section of said second rotary member when running of the tape has stopped with said rocking member making a second movement relative said holding means in response to rotation of said second rotary member for changing the operating mode of the tape player.

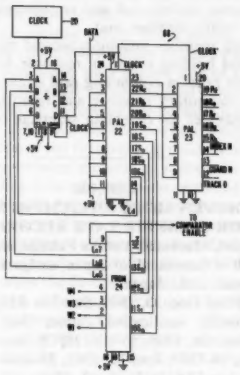
4,495,533

DISK MEMORY INDEXING SYSTEM

Aaron L. Chambers, Woodside, Calif., assignor to Atasi Corporation, San Jose, Calif.

Filed Jun. 28, 1982, Ser. No. 392,504
Int. Cl.³ G11B *27/32, 27/36, 31/00*
U.S. Cl. 360—72.2 **9 Claims**





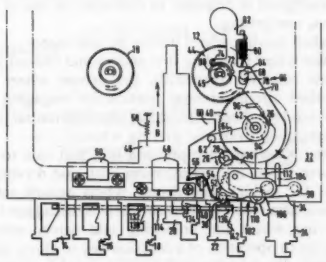
1. A servo disk comprising a plurality of tracks each said track storing data relating to the status of said track, said data comprising a plurality of pulse pairs which are read as said servo disk rotates, each said pulse pair including a first pulse and optionally including a second pulse, wherein as said servo disk rotates said first pulse of each said pulse pair is read before said second pulse is read, and wherein the presence or absence of said second pulse is used to store a binary digit.

4,495,534

TAPE PLAYER

Takamasa Kurafuji, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 9, 1983, Ser. No. 465,098
Claims priority, application Japan, Feb. 9, 1982, 57-19271
Int. Cl.³ G11B *15/22*
U.S. Cl. 360—74.1 **24 Claims**



1. A tape player comprising:

a chassis;

means for running a tape, said tape running means being supported on said chassis;

a first rotary member adapted to rotate while the tape runs;
thrusting means driven by rotation of said first rotary member;
a second rotary member adapted to rotate regardless of running of the tape, said second rotary member including an engagement section rotatable therewith;
holding means formed on said chassis; and
a rocking member releasably held by said holding means and provided with first and second engagement portions corresponding, respectively, to said thrusting means and to said engagement section of said second rotary member,
said rocking member making a first rocking movement about said holding means in response to said thrusting means contacting said first engagement portion during running of the tape for preventing contact between said second engagement portion and said engagement section of said second rotary member, and
said rocking member making a second rocking movement about said holding means in response to said second engagement portion contacting said engagement section of said second rotary member and rotation of said second rotary member for detecting stoppage of the running of the tape.

4,495,535
WHEEL-DRIVEN MODE SWITCHING MECHANISM FOR CASSETTE TAPE RECORDERS

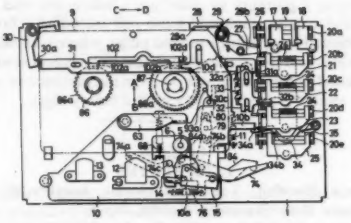
Naomichi Kohri, Maebashi; Yutaka Fukuda, and Hiroshi Muramatsu, both of Gunma, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Dec. 23, 1981, Ser. No. 333,981

Claims priority, application Japan, Dec. 24, 1980, 55-186227[U]; Dec. 24, 1980, 55-186228[U]; Jan. 6, 1981, 56-622; Jan. 21, 1981, 56-7337; Jan. 23, 1981, 56-8644

Int. Cl.³ G11B *15/00, 17/00, 15/12*

U.S. Cl. 360—96.3 **12 Claims**



1. A mode switching mechanism of a cassette tape recording and reproducing apparatus having a plurality of manually operated function keys for operating the apparatus in one of recording, playback, rewind and fast-forward modes, and a motor energized in response to operation of one of said function keys, comprising:
a toothed driving wheel driven by said motor;
a driven wheel including first and second coaxially mounted cams rotatable therewith, the driven wheel having a toothed circumferential portion for engaging with the driving wheel and a toothless circumferential portion for disengaging from said driving wheel;
a spring-biased arm for pressing said first cam to urge said driven wheel into engagement with said driving wheel;
means for locking said driven wheel against said spring-biased arm when the driven wheel is disengaged from said driving wheel and unlocking said driven wheel in response to operation of a function key to allow said spring-biased arm to urge said driven wheel into engagement with said driving wheel;
a first cam follower engageable with said second cam in response to the operation of one of said recording and playback function keys;
a second cam follower engageable with said second cam in response to the operation of one of said rewind and fast-forward function keys; and
a base carrying a transducer head, said base being movable upon engagement with said first and second cam followers into first and second operating positions, respectively.

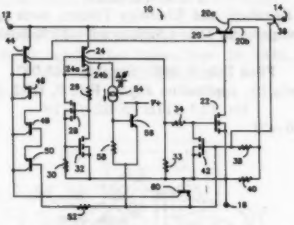
4,495,536
VOLTAGE TRANSIENT PROTECTION CIRCUIT

Byron G. Bynum, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,402

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—91 **21 Claims**



1. A monolithic integrated protection circuit for providing protection to a load coupled thereto, comprising:
a series-pass transistor having first and second main electrodes coupled between an input and an output of the protection circuit and a control electrode;
control circuit means coupled to said control electrode of said series-pass transistor which is responsive to an external signal applied to an input thereof exceeding a threshold value for rendering said series-pass transistor conductive; and
feedback circuit means responsive to said series-pass transistor being driven into saturation for providing a feedback control signal to said control circuit means to cause said series-pass transistor to supply the required load current to said output of the protection circuit while minimizing current drive to said control electrode.

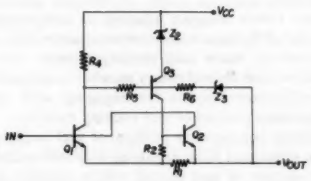
4,495,537
CONTROLLED CURRENT LIMITER

David P. Laude, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed May 10, 1983, Ser. No. 493,234

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—98 **5 Claims**



1. A controlled current limiter comprising:
an input, first and second terminals;
a first transistor having a base connected to said input terminal, a collector connected to said second terminal and an emitter;
a second transistor having a collector connected to said base

of said first transistor, an emitter connected to said first terminal and a base;

a voltage divider having a first end point connected to said base of said second transistor, a second end point connected to said first terminal and an intermediate point connected to said emitter of said first transistor;

a diode connected between said second terminal and said first end point of said voltage divider for preventing current flow through said voltage divider until the voltage difference between said first and second terminals exceed the breakdown voltage of said diode; and

a switch means in series with said diode and having a control electrode connected to the collector-emitter path of said first transistor for connecting said diode in series between said second terminal and said first end of said voltage divider at a preselected current in said first transistor's collector-emitter path.

4,495,538

CONTACTOR APPARATUS COMPRISING MEANS FOR AUTOMATICALLY OPENING POWER CIRCUITS AND A LOCAL CONTROL DEVICE

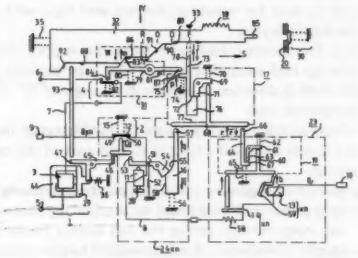
Christian Thomas, Montesson, France, assignor to La Telemecanique Electrique, France

Filed Nov. 9, 1982, Ser. No. 440,382

Claims priority, application France, Nov. 9, 1981, 8120919

Int. Cl.³ H02H *1/00*; H01H *71/10*

U.S. Cl. 361—115 **10 Claims**



1. A contactor apparatus comprising:

i power circuit means for supplying current to a load including a plurality of power switch means in said circuit and, for each of said switch means, a first protection means actuated by the occurrence of a short circuit current through the power circuit means, second and third protection means respectively actuated by the occurrence of second and third types of overload current having an intensity substantially lower than that of a short circuit current, with the third type of overload current having a substantially longer duration than that of the second type, the first protection means, when actuated, triggering said power switch means into an open position to disconnect the circuit from the load;

ii control circuit means including a control switch serially connected with electromagnet means, said electromagnet means, when energized through said control circuit means, controlling the opening of one of said power switch means; and a spring means normally resetting the control switch into a closed position after opening of the one switch means;

iii local control means for controlling one of said switches comprising a mechanical control member having camming surface portions and mounted for displacement along a predetermined path successively from first to second and third positions against the action of an external force such as spring means for resetting the said mechanical member into its first position;

iv a transmission member operated by said local control means having a locking surface portion which contacts a first one of said camming surface portions of the mechanical control member for retaining it in its third position when the said mechanical control member has been set into the said third position under the action of the external force, the said transmission member further having a control surface portion which acts upon the control switch to open the same when the mechanical control member is not in its third position;

v first, second and third snap acting tripping mechanisms each having a cocked and a released position, with spring means normally pushing the said second and third mechanisms into their cocked position, each of said second and third mechanisms automatically passing from the cocked to the released position under the action of a releasing force and from the released to the cocked position under the action of cocking force, the releasing and cocking forces having opposite directions, the first tripping mechanism being positioned by a second one of said camming surface portions when the mechanical control member is in its first position to receive the cocking force therefrom and having a control surface portion which, in the released position of the first tripping mechanism, cooperates with the transmission member to unlock the said locking surface portion from the said first camming surface portion; the second and third tripping mechanism also receiving their cocking force when the mechanical control member is in its first position, the second tripping mechanism being set into its released position by the first protection means when the first protection means is actuated and then applying a releasing force to the first tripping mechanism from its cocked position;

vi release means for the third tripping mechanism, said release means having an actuated position in which they are set by any one of the second and third protection means when any one of the second and third protection means is actuated and then applying a releasing force to the third tripping mechanism, the third tripping mechanism, when in its released position, applying a releasing force to the first tripping mechanism from its cocked position, the camming surface portions of the mechanical control member including a third camming surface portion which stops the displacement of the mechanical control member from its third position to its second position through abutment of the third camming surface portion with the first tripping mechanism.

4,495,539

EXCESS VOLTAGE ARRESTERS

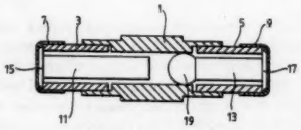
Kenneth G. Cook, Northwood, England, assignor to The M-O Valve Company Limited, England

Continuation of Ser. No. 285,061, Jul. 20, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 490,236

Claims priority, application United Kingdom, Sep. 19, 1981, 8030419

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—124 **2 Claims**



1. An excess voltage arrester comprising a gas filled enclosure and an electrode structure housed within the enclosure which structure defines at least one discharge gap, said structure including

(A) a first electrode, having an end portion in the form of a metal rod; and

(B) a second electrode having a portion in the form of a tube, said portion of said second electrode coaxially surrounding said end portion of said first electrode, the arrester being constructed so that $\pi r_1^2(x+r_2) > 4/3\pi r_2^3$, where r_1 is the radius of said end portion of said first electrode, r_2 is the internal radius of said portion of said second electrode and x is tha axial overlap of the two portions;

(C) and the material of which said end portion of the first electrode consists being such that

(i) on overheating of the arrester due to the occurrence of a discharge in the arrester over a prolonged period,

(ii) an end part of said end portion of the first electrode melts,

(iii) the remainder of said first electrode remaining unmelted,

(iv) said end part taking up under the action of surface tension a generally spherical form supported on said remainder,

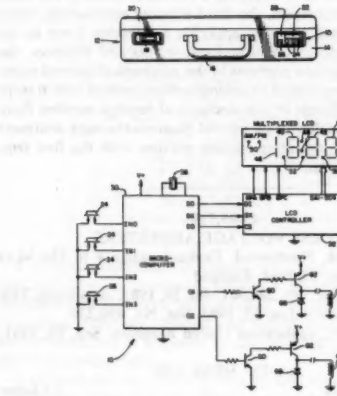
(v) the radius of said end part when molten being such that said end part will contact said portion of the second electrode regardless of the orientation of the arrester.

4,495,540

ELECTRONIC LOCK

Richard C. Remington, Pompton Plains, and Lonnie C. Bott, Wayne, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Dec. 27, 1982, Ser. No. 453,131
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—172 **11 Claims**



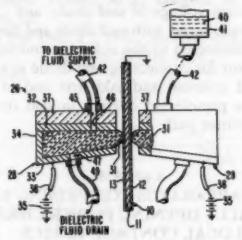
1. An electronic lock comprising display means having a plurality of display locations, a plurality of push buttons, each push button being associated with a different display location, means responsive to the actuation of each push button for displaying at the associated display location a sequence of indicia and for selecting from the sequence, under the control of the push button, a selected indicium for display at the associated display location, thereby enabling a selected set of indicia to be displayed by the display means, means for storing a predetermined set of indicia corresponding to the on-combination condition of the lock, means for comparing the displayed set of indicia with the stored predetermined set of indicia, and means responsive to the comparison for operating associated latch means to open the lock when the sets of indicia match.

4,495,541

APPARATUS FOR AND METHOD OF MAKING AN ELECTRET TAPE

Mark R. Magee, Saratoga, and Richard D. James, Los Altos Hills, both of Calif., assignors to GTE Communication Products Corporation, Stamford, Conn.

Filed Sep. 2, 1983, Ser. No. 529,060
Int. Cl.³ B05C *1/04*
U.S. Cl. 361—225 **7 Claims**



1. Apparatus for making a composite electret tape having an elongated electrically conductive strip and a dielectric layer on one side of said strip, comprising:

a supply reel for winding thereon said tape with an uncharged dielectric layer;

a take-up reel for winding thereon said tape with charged dielectric layers;

means for moving said tape from the supply reel to the take-up reel such that part of said tape moving between the reels is disposed in a plane at an angle of $90° \pm 10°$ with horizontal; and

an electrostatic charging assembly for charging the dielectric layers disposed adjacent to said part of the tape comprising:

a pair of sponge electrodes disposed on opposite sides of said plane and positioned to receive the dielectric layers, respectively, across the full widths thereof;

a supply of dielectric fluid connected to the top of each of said electrodes for wetting same;

a drain for excess dielectric fluid connected to the bottom of each of said electrodes;

means for grounding said strip; and

a source of high dc voltage connected to said electrodes whereby said dielectric layers are simultaneously electrostatically charged.

4,495,542

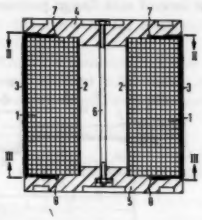
ELECTRIC ROLLER-TYPE CAPACITOR AND METHOD AND DEVICE FOR PRODUCING THE CAPACITOR

Rudolf Krös, Heidenheim, and Harald Vetter, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,063
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239865
Int. Cl.³ H01G *4/00*; H01H *85/30*
U.S. Cl. 361—301 **3 Claims**

1. In an electric roller-type capacitor formed with a capacitor winding built into a housing and having end-face contact layers, the improvement therein which comprises a wrapping

consolidating the capacitor winding and formed of a fiberglass-reinforced synthetic resin composite, said wrapping covering



the circumference of the winding as well as parts of the end-face contact layers.

4,495,543

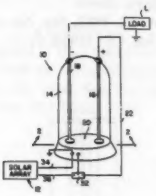
ACCUMULATOR

David T. Langley, Jr., 226 S. Main St., Los Angeles, Calif. 90012

Filed Nov. 15, 1983, Ser. No. 551,837

Int. Cl.³ H01G *4/00*; H02J *3/32*

U.S. Cl. 361—301 **8 Claims**



1. Apparatus for smoothing energy received from an intermittent source, such as a solar energy collector, comprising, in combination:

(a) enclosure means for retaining energy in the form of electrical charges;

(b) first electrode means arranged extending into the enclosure means and connected to a source of intermittent energy for creating a first plate of a capacitor;

(c) second electrode means associated with the enclosure means and connectible to a load for creating a second plate of a capacitor, the enclosure means containing an inert gas selected to function as a dielectric up to a breakdown voltage of the gas; and

(d) an energy cell means associated with the enclosure means and connected to the first electrode means for selectively supplying electrical energy to the enclosure means.

4,495,544

ELECTRIC ROLL-TYPE CAPACITOR

Walter Brüstle, Gerstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

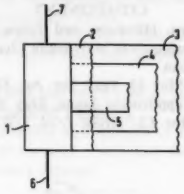
Filed Jun. 28, 1983, Ser. No. 508,586

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224413

Int. Cl.³ H01G *4/08, 1/015*

U.S. Cl. 361—323 **9 Claims**

1. Electric roll-type capacitor with a high capacity stability and a constant temperature coefficient, comprising a dielectric formed of at least two wound shrunken plastic foils, electrodes in the form of a metal value foil and a metal cover foil each being wound between two respective plastic foils, and connection elements electrically conductively connected to said metal foils, one of said metal foils being formed of aluminum and the



other of said metal foils being formed of a metal selected from the group consisting of tin and a tin-lead alloy.

4,495,545

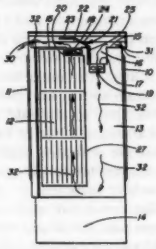
ENCLOSURE FOR ELECTRICAL AND ELECTRONIC EQUIPMENT WITH TEMPERATURE EQUALIZATION AND CONTROL

Gilles L. Dufresne, Aylmer; George V. Devlin, Nepean; Alexander F. Campbell, Woodlawn, and David Campbell, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 21, 1983, Ser. No. 476,940

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **10 Claims**



1. An enclosure for electrical equipment, said enclosure including two sections side by side and interconnected at each end;

an air inlet connected to one section at one end;

an air outlet connected to the other section at said one end;

a pivotally mounted baffle at said one end, moveable alternately to one of a first position and a second position; the baffle isolating said sections from said inlet and outlet and permitting connection between sections at said one end in said first position for continuous circulation through both sections, the baffle preventing connection between sections at said one end opening said sections to said inlet and outlet in said second position for circulation from said inlet through said sections to said outlet;

a first fan operable to continuously circulate air through said sections when said baffle is in said first position;

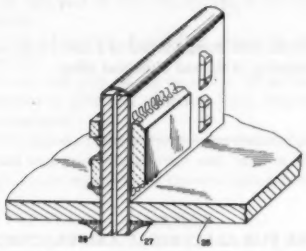
a second fan operable when said baffle is in said second position, to assist in circulating air from said inlet to said outlet through said sections;

heat responsive means to move said baffle from said first position to said second position when the temperature in said enclosure exceeds a predetermined value.

4,495,546
HYBRID INTEGRATED CIRCUIT COMPONENT AND PRINTED CIRCUIT BOARD MOUNTING SAID COMPONENT

Tsuneshi Nakamura, Hirakata, and Tatsuro Kikuchi, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1982, Ser. No. 377,997
Claims priority, application Japan, May 18, 1981, 56-74689
Int. Cl.³ H05K *1/14, 3/40*
U.S. Cl. 361—398 **24 Claims**



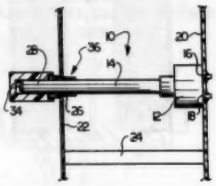
1. A hybrid integrated circuit component for insertion in a slit of a mother printed circuit board, comprising: a flexible circuit board composed of a flexible insulated substrate, a circuit conductor formed on one surface of said flexible insulated substrate, and a pair of conductor layers formed along two opposite sides of said flexible insulated substrate to serve as a pair of external connection terminals; circuit elements mounted on said flexible insulated substrate and electrically connected to said circuit conductor; and a pair of hard supporting plates cemented on the other surface and at said two opposite sides of said flexible insulated substrate so that said flexible circuit board can be folded at a center bending portion of said flexible insulated substrate so that said pair of hard supporting plates face to each other and so that said pair of external connection terminals are arranged close to each other when said flexible insulated substrate is folded and so that said flexible insulated substrate at said center bending portion, when folded, has a spring characteristic sufficient to spring said substrate outward toward a flat condition with a sufficient force to ensure contact between said slit of said mother printed circuit board and each of said pair of external connection terminals of said flexible circuit board when said pair of external connection terminals of the folded flexible insulated circuit board are inserted into said slit of said mother printed circuit board.

4,495,547
BUSHING FOR USE BETWEEN A CONTROL KNOB AND A HOUSING

Paul H. Stoverock, Hannibal, Mo., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 6, 1982, Ser. No. 365,917
Int. Cl.³ H01F *15/02*
U.S. Cl. 361—400 **8 Claims**

1. In a system including a device having a movable control arm, a printed circuit board, and a panel disposed adjacent said board, said device being mounted on said printed circuit board so that the control arm extends through an opening in said panel, and wherein a knob is mounted on the distal portion of said arm, the improvement comprising a bushing having a barrel portion and a flange portion through both of which extends a passage for closely receiving said control arm, where said barrel portion is dimensioned to fit in said panel opening and to be closely received thereby and where said flange portion is attached to one end of said barrel portion and has a transverse dimension larger than said opening, said bushing being mounted on said control arm between said panel and said knob, and where said knob is axially slideable toward said printed circuit board along said arm whereby, when an axial force is applied to said knob, said knob slides to a position wherein one axial face of said flange portion abuts said panel

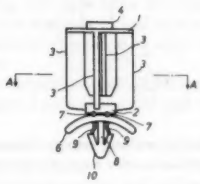


and the other axial face of said flange portion abuts said knob so that both axial and transverse loading applied to said knob are absorbed by said bushing and said panel rather than being transmitted to said printed circuit board via said control arm.

4,495,548
SPACER FOR WIRING BOARDS AND ASSEMBLED STRUCTURE THEREOF

Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Nov. 12, 1982, Ser. No. 441,000
Int. Cl.³ H05K *7/12*
U.S. Cl. 361—413 **11 Claims**



1. A spacer for wiring board which comprises construction elements as follows:

an upper substrate having a flange portion at the center of which a coupling hole is formed which penetrates through said upper substrate;

a lower substrate opposite to said upper substrate;

a plurality of support members bridging said upper and lower substrates so as to maintain a space therebetween;

a resilient coupling member having a plurality of link pieces and a link plate; and

a resilient plate push piece formed between one side of said lower substrate and end portions of said link pieces and said link plate,

all of said construction elements, including said upper substrate, said lower substrate, the plurality of said support members, and said resilient plate push piece being integrally formed in one piece.

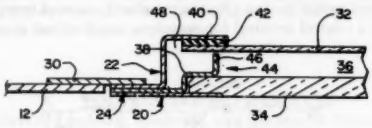
4,495,549
INFRARED RADIATION FILTER LENS FOR AIRCRAFT LIGHTS

Albert A. Carlson; Darrel M. Owen, both of Seattle, and George W. Van Winkle, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1982, Ser. No. 425,428
Int. Cl.³ B64F *1/20*
U.S. Cl. 362—62 **2 Claims**

1. An infrared radiation filter lens for aircraft lights, comprising heat-conductive filter frame means configured for

disposition in heat-exchange relationship with the structure of the aircraft proximate the location of said lights; first and second window panels secured peripherally by said filter frame means in laterally spaced, generally conforming relationship defining a fluid cell therebetween for interposition outwardly proximate said aircraft lights in the light path thereof; a fluid, infrared radiation filtration medium disposed for convective circulation within said cell; and baffle means inwardly proximate transverse side edges of said cell intermediate longitudinal top and bottom edges thereof for deflecting convective circulation of said fluid along and in contact with said side edges through flow channels having inlet and outlet ports defined by said baffle means; wherein said filter frame means includes a generally "U"-shaped clip element having inner and outer legs receiving one of said window panels therebetween, said inner leg being displaced laterally inwardly within said fluid cell along said transverse side edges intermediate said longitudinal edges to comprise said baffle means.

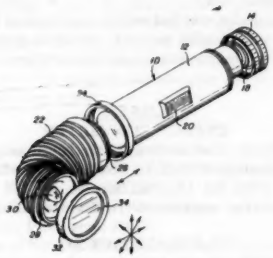


4,495,550

FLEXIBLE FLASHLIGHT

Joseph Visciano, 564 Holt St., West Hempstead, N.Y. 11552

Filed Apr. 24, 1984, Ser. No. 603,364
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—189 **8 Claims**



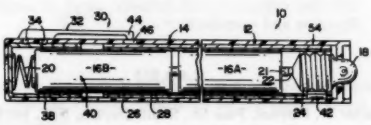
1. A flexible flashlight, comprising in combination:
(a) a body tube which contains at least one battery cell;
(b) a threaded end cap which threads on to a mating threaded body tube to end cap section; wherein when said battery cell is installed into the invention said threaded end cap is installed thereby fixing said battery in place;
(c) a switch, whereby said flexible flashlight is turned on and off;
(d) a threaded body tube socket located at the opposite end of said body tube from said end cap; whereby a bellows type extension may be installed;
(e) a bellows which is attached to said threaded body tube socket by a mating threaded bellows to body tube socket;
(f) a threaded bellows to bezel adapter located at the end of said bellows furthest from said threaded bellows to body tube socket; wherein said threaded bellows to bezel adapter contains a bulb mounted coaxially at the center of saidthreaded bellows to bezel adapter whereby when said bellows in flexed said bulb radiates light in the direction extending away from the open end of said threaded bellows to bezel adapter;
(g) a bezel ring with an inside thread which mates with the outside thread on said threaded bellows to bezel adapter whereby said bezel ring has an aperture into which is fitted an optically transmitting lens;
(h) means for fixing the position of said bellows in a rigid position once it has been flexed;
(i) means for preventing said body tube from rolling off a surface once said body tube has been placed in position; and,
(j) means for attaching said body tube to any surface which contains ferro-magnetic material;
(k) means for connecting said battery to said bulb in such manner as to prevent said connecting means from breaking under frequency flexion.

4,495,551

CONDUCTOR TUBE FOR FLASHLIGHTS

Carl L. Foltz, Largo, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Aug. 17, 1983, Ser. No. 524,097
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—205 **17 Claims**



1. A battery operated flashlight, comprising in combination:
a casing;
a two-pole switch means having a first pole connected in electrical contact with one terminal of the battery and a second pole;
a light bulb having a base terminal and a center terminal;
means for connecting another terminal of the battery to the center terminal of said light bulb;
a substantially cylindrical conductor tube having a bulb-receiving end for receiving said base terminal of said light bulb and for providing electrical contact between the base terminal of said light bulb and the second pole of said switch means when said switch means is actuated to an "on" position;
said conductor tube comprising an inner non-conductive sleeve and an outer conductive sleeve;
said base terminal of said light bulb being positioned within said bulb-receiving end of said conductor tube; and
said conductor tube further comprising at least one lance extending from said outer conductive sleeve in electrical contact with said base terminal of said light bulb fitted into said bulb-receiving end of said conductor tube.

4,495,552

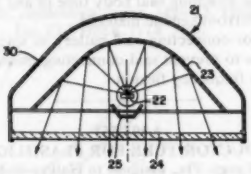
FORWARD SHINING VEHICLE LAMP

Henry W. Graff, Elgin, Ill., assignor to Cal Custom Accessories, Inc., Carson, Calif.

Filed Dec. 13, 1982, Ser. No. 448,935
Int. Cl.³ F21M *3/08*
U.S. Cl. 362—297 **10 Claims**

1. A forward shining vehicle lamp comprising:
a protective housing having an open mouth;
a reflective member mounted to the protective housing, said reflector member having an axis and a generally concave reflective surface that is oriented generally toward the open mouth of the protective housing;
a light source secured to the lamp in predetermined relationship between the reflector member and the open mouth of the protective housing; and
said internal generally concave surface of the reflector member has a generally continuous grid structure, said generally continuous grid structure including a plurality of grid

sections having a reflective surface, wherein said generally continuous grid structure of the reflector member is defined by a plurality of spaced vertical curves intersecting with a plurality of spaced horizontal curves to define said plurality of grid sections, the reflective surface of



each said grid section being generally concave and shaped to reflect light eminating from said light source such that the pattern of light reflected from said generally continuous grid structure substantially conforms to a target pattern that defines a predetermined array of candlepower direction and magnitude.

4,495,553

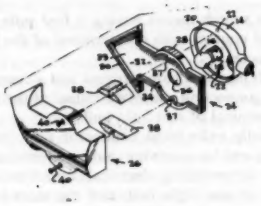
VEHICLE LIGHT ASSEMBLY

Charles W. Haynes, Pine St., South Dayton, N.Y. 14138

Filed Jul. 14, 1983, Ser. No. 513,405

Int. Cl.³ F21V *3/00*

U.S. Cl. 362—311 **19 Claims**



1. A turn signal replacement lens assembly for mounting on a bulb housing having an outer housing portion positioned about a bulb socket, said lens comprising:

a base portion including mounting means matingly engageable with and supported on the outer housing portion and having a periphery defining a direction indicating symbol extending transversely outwardly beyond the periphery of the housing portion;

an outer translucent lens mounted on said base portion and having a periphery that is substantially concentric with the periphery of said base portion; and

retaining means for retaining said outer translucent lens and base portion on said bulb housing.

4,495,554

ISOLATED POWER SUPPLY FEEDBACK

Victor M. Simi, Jessamine County, and Jerry M. Sublette, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,615

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **9 Claims**

4. A switched power supply comprising:

a source of direct current input voltage to provide power to said power supply,

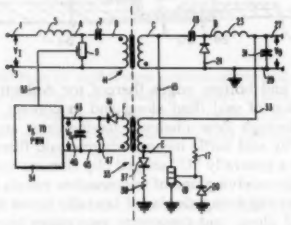
an inductor connected to said input voltage,

a first switch having a conductive state and a non-conductive state and connected, when switched to a first of said states, to connect said inductor for having increased current applied through said inductor by said input voltage and, when switched to a second state of said states, to steer current from said inductor to at least one capacitor,

a first transformer having its primary connected to be driven by said inductor, said first transformer having its secondary connected to the input of a first rectifier, the output of said first rectifier being the output of said power supply,

a second transformer having a primary with first and second terminals and having said first terminal connected to said output of said rectifier,

a second switch having a first terminal and a second terminal and a control terminal for switching said first and second



terminals between connected state and a disconnected state, said first terminal being connected to said second primary terminal, said second terminal being connected to a point having a reference potential, said control terminal of said second switch being connected between the secondary of said first transformer and said input of said first rectifier,

a second rectifier connected to the secondary of said second transformer, and

control means for said first switch connected to the output of said second rectifier to vary control in response to the level of the output of said second rectifier.

4,495,555

ENERGY CONVERTER

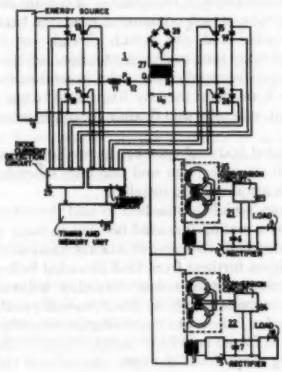
Lucas Eikelboom, Haaksbergen, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Jul. 14, 1982, Ser. No. 398,175

Claims priority, application Netherlands, Jul. 23, 1981, 8103475

Int. Cl.³ H02M *3/315*

U.S. Cl. 323—28 **9 Claims**



1. An energy converter for coupling a plurality of loads to a source of electric energy comprising: a bridge circuit tuned to

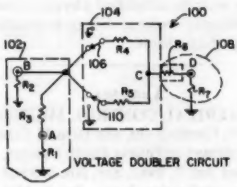
a constant frequency and including at least two thyristors and a series resonant circuit; a plurality of parallel-connected output transformers included in the series resonant circuit; energy buffers respectively coupled to the secondary windings of each of the output transformers whereby electric energy is supplied from said source to said plurality of loads, the number of loads being equal to the number of output transformers, and a plurality of control circuits activated by the voltages across the different energy buffers, each of said control circuits controlling the current through a primary winding of a relevant output transformer such that the voltage across the corresponding energy buffer remains constant.

4,495,556

VOLTAGE DOUBLER CIRCUIT

Robert J. Patukonis, Ijamsville, and Harmon W. Banning, Derwood, both of Md., assignors to Weinschel Engineering, Gaithersburg, Md.

Filed Nov. 30, 1982, Ser. No. 445,389
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—59 **23 Claims**



1. A voltage ratio doubler circuit comprising:
leveller means, having an input node, for maintaining the input voltage V_{IN} at the input node at a constant level;
an output node at an output voltage V_{OUT}; and
means, coupled between the input node and the output node, for selectively determining the ratio V_{OUT}/V_{IN} to equal either (a) a first predetermined value or (b) one-half said predetermined value.

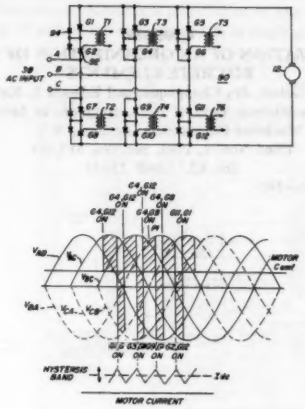
4,495,557

SWITCHING CONTROLLER DIRECTLY OPERABLE FROM AC

James G. Weit, Painesville, Ohio, assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 005,220, Jan. 22, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,848
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—89 **3 Claims**

1. A high response switching controller, having a power input for connection to multi-phase power lines and a power output for supplying power to a load, comprising:
means for receiving an input current demand signal and a signal related to the current actually produced by the controller and generating a difference signal related to the difference between said demand and actual current signals;
a bridge configured output connected between the power input and the power output;
said bridge configured output comprises a plurality of controller switching means for switching on and off in response to a control signal and each of which is directly connected between the power input and the power output;
said plurality of controlled switching means disposed to supply power to the load for the power lines and to supply power from the load to the power lines;
sequencing logic means for selecting the power lines having the greatest magnitude of potential difference therebetween; and
output selecting and drive circuit means responsive to said sequencing logic and said difference signal for switching on and off the controlled switching devices connected



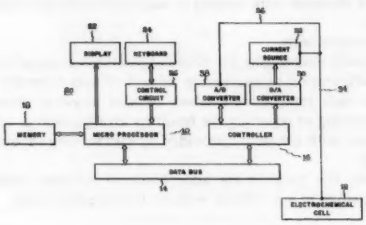
between the lines selected by said sequencing logic to provide the current demanded by the input current demand signal.

4,495,558

METHOD AND APPARATUS FOR DETERMINING OXIDE FILM THICKNESS

Pieter G. Cath, Orange Village; John Capp, Willowick, and William P. Loeffler, Mentor, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,118
Int. Cl.³ G01B *13/02*; B01D *59/40*; C25F *5/00*
U.S. Cl. 364—563 **17 Claims**



1. A method for determining the thickness of an electrically insulative metal oxide coating on an electrically conductive metal substrate sample which comprises:
(a) electrolytically reducing a sample of said oxide coating in an electrochemical cell at relatively constant current density while measuring the cell voltage,
(b) defining the relationship between cell voltage rise attributable to electrolytically reducing the oxide coating and the time interval of electrolytic reduction in the form of a mathematical curve, said curve defining the cell voltage rise with time passage from a predetermined threshold voltage value to a final cell voltage value achieved when said oxide coating has been removed by said electrolytic reduction,
(c) determining the final time value needed to completely remove said coating on said mathematical curve as the intersection point between a tangent to said curve at the region between said threshold voltage value and said final cell voltage value, and

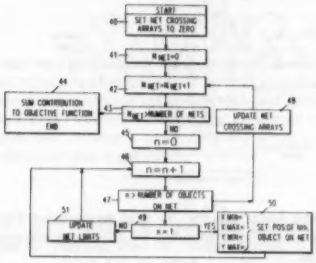
(d) computing the oxide thickness using the total elapsed time of electrolytic reduction as determined by said final time value.

4,495,559

OPTIMIZATION OF AN ORGANIZATION OF MANY DISCRETE ELEMENTS

Charles D. Gelatt, Jr., Chappaqua, and Edward S. Kirkpatrick, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,651
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—148 **6 Claims**



4. A method of positioning all the physical elements of an interrelated configuration of said physical elements in a unitary functional entity wherein the interrelated positioning satisfies at least one specification related to the usefulness of said functional entity:

comprising in combination the steps of

providing a representation of all the interrelated individual physical elements in said collection,

providing a scoring capability capable of measuring the acceptability of a particular positioned configuration of said elements with respect to said usefulness specification and

interdependently

iteratively exchanging the physical position occupied in said configuration of successive subsets of said elements and for each repositioned subset of said physical elements accepting or rejecting the resulting arrangement in accordance with a measure provided by said scoring capability, and

varying the measure for acceptance of a subset position exchange in accordance with an incremental trend.

4,495,560

FLUCTUATING DRIVE SYSTEM

Gunji Sugimoto, Okazaki; Hideo Arakawa; Toshikazu Ishihara, both of Nagoya; Masahiro Sugiura, Aichi, and Katsuhiko Takahashi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 7, 1981, Ser. No. 281,176
Claims priority, application Japan, Jul. 9, 1980, 55-94137
Int. Cl.³ G05B *11/14, 11/36, 15/02*; G05D *23/00*
U.S. Cl. 364—154 **51 Claims**

1. A fluctuating drive system comprising:

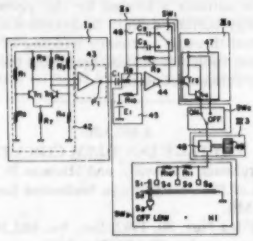
random generating means for generating a randomly varying physical quantity in which the proper spectral density for each frequency has a relation ship of $1/f^k$ (wherein k is a non-zero arbitrary value) to the frequency f and varies at random;

control means for controlling the randomly varying physical quantity wherein said randomly varying physical quantity has a fluctuating amplitude, a fluctuating frequency range and a mean level;

control means for controlling the randomly varying physical quantity;

amplifying means for amplifying the controlled physical quantity;

energy generating means; and



driving means for driving said energy generating means in accordance with the amplified physical quantity,

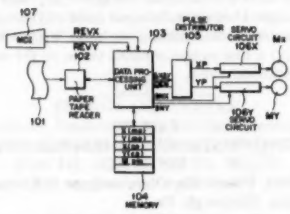
whereby a randomly varying energy is generated from said energy generating means.

4,495,561

NUMERICAL CONTROL METHOD

Hitoshi Matsuura, Hachioji-shi, and Hiroshi Sakurai, Hino-shi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,904
Claims priority, application Japan, Jul. 7, 1981, 56-105858
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—167 **3 Claims**



1. In a numerical control method for a numerical control system having means for executing a mirror image function wherein the moving direction of a movable member is reversed with respect to a commanded direction for each control axis, and memory means for storing coordinate values of a commanded position and coordinate values of a current machine position, the numerical control method for the numerical control system comprising the steps of:

(a) updating the current machine position coordinate value of the effective ocntrol axis for which the mirror image function is effective, in the direction which is the reverse of the commanded direction in accordance with the position of said movable member and updating the current machine position coordinate value of the ineffective control axis for which the mirror image function is ineffective, in the same direction as the commanded direction in accordance with the position of said movable member;

(b) storing respective axial coordinate values of the current machine position at the time that the mirror image function has become effective; and

(c) calculating the commanded position coordinate values of directly preceding numerical control data after the mirror image function has become effective, by using the current machine position coordinate values and the axial coordi-

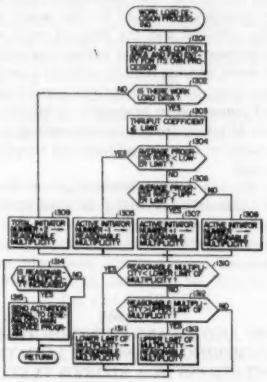
nate values at the time that the mirror image function has become effective.

4,495,562

JOB EXECUTION MULTIPLICITY CONTROL METHOD

Eiichi Yamaji, Ueno, and Yoshie Ohno, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 271,048
Claims priority, application Japan, Jun. 4, 1980, 55-74258
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **18 Claims**



1. A method of controlling multiplicity of job execution in a computer system including at least one processor for executing jobs in parallel, said method comprising steps of:

(a) measuring used time periods of a central processing unit and an input/output device of said processor, respectively for respective executed jobs which are being executed in parallel in said processor during a measurement time interval;

(b) calculating an average progress rate which represents an average of progress rates of the respective executed jobs at which rates the respective executed jobs are processed by means of the central processing unit and the input/output device during the measurement time interval, said calculation being done from the measured used time periods of the central processing unit and the input/output device for the respective executed jobs; and

(c) comparing the average progress rate with a predetermined limit; and

(d) controlling the execution of a new job on said computer system as a function of said comparison.

4,495,563

MICROCOMPUTER HAVING SEPARATE ACCESS TO COMPLETE MICROCODE WORDS AND PARTIAL MICROCODE WORDS

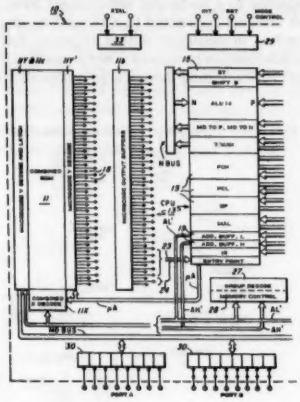
Kevin C. McDonough, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

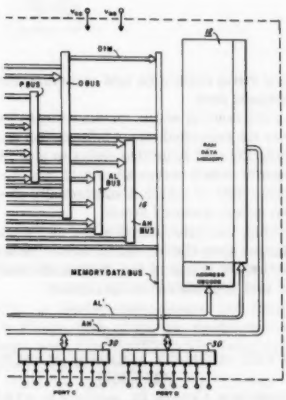
Filed Jul. 2, 1981, Ser. No. 279,902
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **20 Claims**

1. A microcomputer device comprising:

a semiconductor integrated circuit having an arithmetic/logic unit, a plurality of registers for storing data and memory addresses, parallel busses for interconnecting the arithmetic/logic unit and the registers, and control means for generating command signals for controlling operation of the arithmetic/logic unit and accessing the busses and registers all within the integrated circuit;

wherein the control means includes a memory array for storing multi-bit microinstruction words defining said command signals, the array having a first output to said busses for parts of the microinstruction words and a second output for complete microinstruction words, the second output including a plurality of N bits in parallel, the first output including a plurality of M bits in parallel, where N and M are integers and N is much greater than M;





and addressing means for separately applying first and second types of micro addresses to the array via said registers and busses, the addressing means including first circuitry for selecting said parts of microinstruction words by said first type of micro addresses, the addressing means including second circuitry for selecting said complete microinstruction words by said second type of micro addresses.

4,495,564

MULTI SUB-CHANNEL ADAPTER WITH SINGLE STATUS/ADDRESS REGISTER

Wilburn D. Draper, Raleigh, and Melvin T. Laakso, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

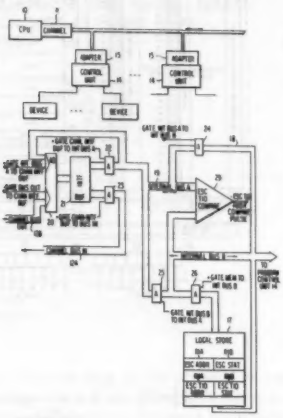
Filed Aug. 10, 1981, Ser. No. 291,741
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **10 Claims**

1. A method for storing and presenting status information relative to a plurality of sub-channel devices in which the

status information for each sub-channel is stored in a random access memory means, the total access time of which is a substantial significant time factor in response to a request for the status of one said plurality of sub-channel devices comprising the steps of:

receiving a first status request for a particular device corresponding to a particular sub-channel from a communication channel connected to a requesting device,

responding immediately with a response that indicates that the information requested is not immediately available and that the requesting device is to independently present the



said first status request on said communication channel at a subsequent time,

accessing the random access memory means location which contains the requested status information and

transferring the said requested status to a single status storage register which serves all of said sub-channel devices, the access time of which is substantially shorter than the random access memory means,

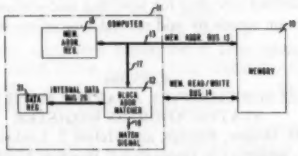
and providing the status stored in the said single status storage register upon the receipt of the said subsequent status request for the status of the aforementioned sub-channel via the said communication channel.

4,495,565

COMPUTER MEMORY ADDRESS MATCHER AND PROCESS

Dennis J. Thompson, Geneva, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 9, 1981, Ser. No. 319,378
Int. Cl.³ G06F *9/20*
U.S. Cl. 364—200 **21 Claims**



1. For use in a system having a computer memory with a plurality of addressable storage locations, a computer, and an address bus interconnecting the computer and memory for specifying a unique address of a said location in the memory on a memory read or write transaction, an address matcher for detecting memory read and write transactions to a memory address within a block of consecutive computer memory addresses specified by a lower block address and an upper block address, CHARACTERIZED BY

a plurality of matcher memories (**30, 31, 32**) each having a plurality of storage words individually addressable and a word address for each matcher memory being a different portion of said unique address and being supplied by a different prescribed subfield (ADDRO-7, ADDR8-15 ADDR16-23) of the computer memory address bus (ADDRO-23) to output data contained in a word of each matcher memory identified by the word address in the respective subfield and the data of each word of each matcher memory containing indications defining whether or not a word address used to address a matcher memory is within a range having lower and upper boundaries equal to values contained in respective subfields of the lower and upper block addresses corresponding to the subfields of the computer memory address bus supplying the word address, and

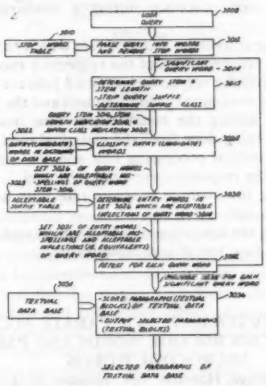
means (**34, 35**) responsive to the indications from each of the matcher memories occurring as a result of a memory transaction for determining if the computer memory address lies within the specified block of consecutive memory addresses.

4,495,566

METHOD AND MEANS USING DIGITAL DATA PROCESSING MEANS FOR LOCATING REPRESENTATIONS IN A STORED TEXTUAL DATA BASE

Robert V. Dickinson, Sandy Hook, and Louis M. Galie, Westport, both of Conn., assignors to System Development Corporation, Santa Monica, Calif.

Filed Sep. 30, 1981, Ser. No. 307,093
Int. Cl.³ G06F *7/30*
U.S. Cl. 364—200 **28 Claims**



1. A method using digital data processing means and stored textual block identifiers in a table for locating in a stored data base having a plurality of textual blocks, those textual blocks having the best match with a query, the textual blocks in the data base having words grouped into such textual blocks, the textual block identifiers being grouped and each group of textual block identifiers corresponding to one of the blocks in the stored data base, each of the textual block identifiers providing an indication of one of the textual blocks in the stored data base which contains the word corresponding to the group of textual block identifiers in which the textual block identifier is located, the method comprising the steps of:

(a) receiving a query having representations of a plurality of

query words to be located in the textual blocks contained in the stored data base;

(b) determining, for each one of a plurality of the query words, at least one corresponding set of equivalent words which are contained in the stored data base, each of the equivalent words in such set being equivalent to the corresponding query word and corresponding to one of the groups of textual block identifiers;

(c) processing the textual block identifiers contained in the groups of textual block identifiers which correspond to the words in the determined sets of equivalent words to thereby form a representation of a score for at least a first of the textual blocks which is represented by said textual block identifiers, the representation of a score representing the total number of said sets of equivalent words which have at least one of said equivalent words in said at least a first of the textual blocks; and

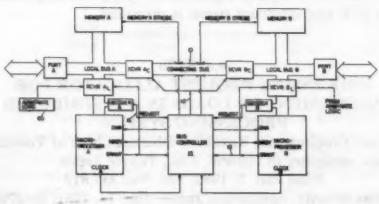
(d) utilizing said representation of a score to provide output data pertaining to at least one textual block, for which a representation of a score has been formed.

4,495,567

MULTIPROCESSOR/MULTIMEMORY CONTROL SYSTEM

Kevin L. Treen, North Attleboro, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Oct. 15, 1981, Ser. No. 311,743
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **9 Claims**



1. Apparatus for regulating access by each of a plurality of asynchronous data processors to each of a plurality of memories, each of said processors being associated with one of said memories, each of said processors needing access to its associated said memory and to said memory associated with each other of said processors, said apparatus comprising;

local bus circuitry for carrying data signals and connected to said processors and said associated memories to selectably permit each of said processors to have, or to prevent each of said processors from having, access over said local bus circuitry to said processor's associated memory,

connecting bus circuitry for carrying said data signals and connected to said processors and said associated memories to selectably permit each of said processors to have, or prevent each of said processors from having, direct access over said local bus circuitry to said memory associated with each other of said processors for reading and writing, and

control circuitry responsive to said processors and connected to trigger said local and connecting bus circuitries to give each of said processors making a request access over said connecting bus circuitry for reading and writing said data signals directly between said requesting processor and said memory associated with one other of said processors, and to give each of said processors access over said local bus circuitry to its associated memory except while access to said associated memory is being given to another of said processors.

8. The method of regulating access by each of a plurality of asynchronous data processors to each of a plurality of memories, each of said processors being associated, through local bus circuitry, with one of said memories, each of said processors needing access to its associated said memory and access, through connecting bus circuitry, to said memory associated with each other of said processors, said method comprising:

signaling a first one of said processors requesting said access to said memory associated with a second one of said processors to wait until its request has been satisfied,

signaling said second one of said processors to disconnect itself from said local bus circuitry, and

opening said connecting bus circuitry, during at least part of the time when said first one of said processors is waiting and said second one of said processors has disconnected itself, to permit said first one of said processors to have said access to said memory associated with said second one of said processors for reading and writing.

4,495,568

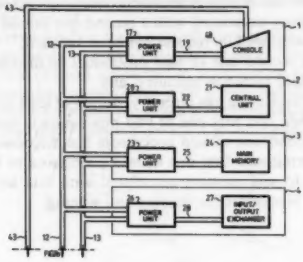
APPARATUS FOR THE CONTROL AND MONITORING OF POWER SUPPLY SOURCES FOR DATA PROCESSING SYSTEMS

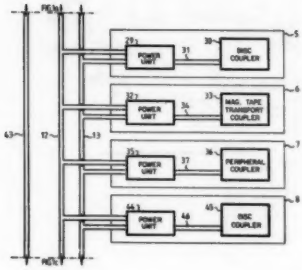
Takats Gilbert, Le Mesnil Saint Denis, and Dumay Gérald, Fontenay le Fleury, both of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

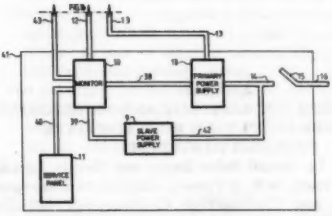
Filed Dec. 23, 1981, Ser. No. 333,796
Claims priority, application France, Dec. 30, 1980, 80 27770
Int. Cl.³ G06F *11/30*
U.S. Cl. 364—200 **28 Claims**

1. Apparatus for controlling and monitoring a power supply system that includes a plurality of power sources for supplying power to a plurality of devices, the power sources being allocated among a plurality of power supply subsystems in a predetermined configuration, the apparatus comprising a control bus; first interface means for interfacing the power sources to the control bus and including first circuit means responsive to signals on the control bus for controlling and monitoring the power sources; second interface means for interfacing, to the control bus, operating console means for operating the system and power supply means for supplying power to the power sources, the second interface means including second circuit means responsive to signals on the control bus for controlling and monitoring the operating console means and the power supply means; a configuration definition unit connected to the control bus and including memory means for storing parameters defining the types, the numbers, and the configuration of the power sources; and a control unit for exchanging signals

over the control bus with the configuration definition unit and with the first and second interface means for controlling and







monitoring the power sources, the operating console means and the power supply means.

4,495,569

INTERRUPT CONTROL FOR MULTIPROCESSOR SYSTEM WITH STORAGE DATA CONTROLLING PROCESSOR INTERRUPTED BY DEVICES

Eiichi Kagawa, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,302

Int. Cl.[3] G06F *15/16*

U.S. Cl. 364—200 **7 Claims**

1. A multiprocessor system comprising:

a plurality of processor means for generating a bus request signal,

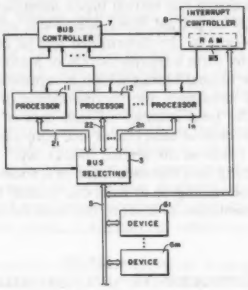
local buses individually connected to each of said processor means,

a plurality of device means for generating an interrupt request signal, respectively, said device means being commonly controlled by each of said processor means,

a common bus commonly connected to each of said device means,

data storing means for storing destination data for specifying at least one of said plurality of processor means which is requested to be interrupted by each of said device means,

interrupt controlling means responsive to the interrupt request signal from said device means for reading out the destination data from said data storing means for recognizing the processor means corresponding to the destination



according to said destination data for providing an interrupt signal to the corresponding processor means, and

bus selecting means for connecting a local bus of the corresponding processor means to said common bus according to the bus request signal from the processor mean to which said interrupt signal is provided.

4,495,570

PROCESSING REQUEST ALLOCATOR FOR ASSIGNMENT OF LOADS IN A DISTRIBUTED PROCESSING SYSTEM

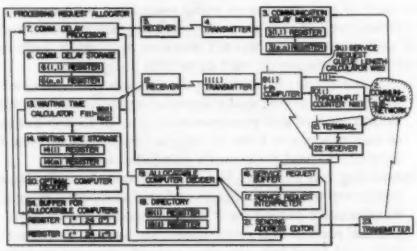
Hiroyuki Kitajima, and Kazuhiko Ohmachi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,812

Claims priority, application Japan, Jan. 14, 1981, 56-2793[U]

Int. Cl.[3] G06F *15/16, 3/04*

U.S. Cl. 364—200 **11 Claims**



1. In a distributed processing system including a plurality of computers and terminals connected to each other through communication lines for performing service requests issued by one of said computers or terminals; a processing request allocator in communication with said computers and terminals for deciding which computer or terminal each service request is to be allotted to, comprising means for collecting information on the waiting time to start processing for a service request at each computer and terminal and on the communication delay time to receive information necessary to execute a service request from respective locations of each of said computers and/or terminals within the distributed processing system, means responsive to a service request for determining which program is necessary to perform the service request and fur-

ther determining which computers and/or terminals have the necessary program, and means responsive to said collecting means and said determining means for allotting said service request to a selected computer or terminal having the necessary program to execute the service request and where the sum of the processing waiting time at the selected computer or terminal and the communication delay time associated with the selected computer or terminal is a minimum as compared to that of the other allocatable computers as terminals for the service request.

4,495,571

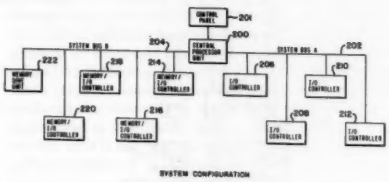
DATA PROCESSING SYSTEM HAVING SYNCHRONOUS BUS WAIT/RETRY CYCLE

Theodore R. Staplin, Jr., Chelmsford; John J. Bradley, Framingham, both of Mass.; Richard L. King, Hollis, N.H.; Robert C. Miller, Braintree, Mass.; Ming T. Miu, Chelmsford, Mass., and Jian-Kuo Shen, Watertown, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 8,122, Jan. 31, 1979, abandoned. This application Jan. 15, 1982, Ser. No. 339,278

Int. Cl.³ G06F *3/04, 13/00*

U.S. Cl. 364—200 **16 Claims**



SYSTEM CONFIGURATION

1. A data processing system comprising a plurality of units coupled by means of a common bus to transfer information between said units, said plurality of units comprising at least a first, second and third units, wherein said first unit is a resource shareable by at least said second and third units, said system comprising:

A. sequencing means, coupled to said common bus, for avoiding conflicts between two or more units of said plurality of units attempting to simultaneously request use of said common bus including means for generating sequencing signals on the common bus and means in said plurality of units responsive to the sequencing signals to avoid conflicts;

B. first means, included in said first unit and coupled to said common bus, for granting use of said common bus and processing a data transfer request from a one unit of said plurality of units in response to said one unit requesting use of said common bus by generating a data transfer request signal if said common bus is not already in use, said first means also for sending a command signal via said common bus to said second unit and for waiting for receipt of a proceed signal or a wait signal by a second means via said common bus from said second unit, said command signal being sent by said first means only if said first means is not processing said data transfer request, said command signal indicating that said first unit desires access to said second unit;

C. said second means, included in said first unit and coupled to said first means and to said common bus, for receiving said proceed signal or said wait signal via said common bus from said second unit, said proceed signal indicating that said second unit which issued said proceed signal has granted access to said first unit, said wait signal indicating that said second unit which issued said wait signal desires that said first unit wait and retry accessing said second unit by resending said command signal; and

D. third means, included in said first means and coupled to said second means, for reinitializing said first means in response to said second means receiving said wait signal such that said first means will resend said command signal to said second unit said first means suspending resending of said command signal to process a data transfer request if such request is received from one of said plurality of units.

4,495,572

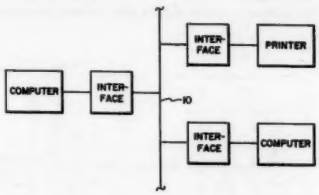
COMPUTER INTERCOMMUNICATION SYSTEM

Robert J. Bosen, Spanish Fork, Utah, assignor to Zeda Computers International Limited, Provo, Utah

Filed Feb. 8, 1982, Ser. No. 346,856

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **10 Claims**



1. A computer intercommunication system, comprising an intercommunication bus; a plurality of computers; an equal plurality of interface means, each interface means being associated with and electrically connected to a respective one of said computers and to said bus to accept signals from the said one computer and to place such signals on said bus, or to accept signals from said bus and to feed them to the said one computer, said interface means being normally operable at a standarized speed but capable of operating at other speeds; program means within each computer for enabling that computer to assemble information to be communicated into a standardized information packet, such packet containig a place to introduce information that can be used by computers in intercommunication therewith by way of said bus to increase the speed of communication for the other information in the packet and to cause the sending computer to increase the speed of transmission of the packet after transmission of the speed information if the latter indicates increased speed, and to cause the receiving computer to increase the speed of receiving the other information in the packet after receiving the speed information, if the latter indicates increased speed.

4,495,573

METHOD AND DEVICE FOR TRANSMISSION OF DIGITAL DATA

Jean C. Ballegeer, and Duyet H. Nguyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 29, 1982, Ser. No. 363,389

Claims priority, application France, Apr. 8, 1981, 81 07037

Int. Cl.³ G06F *9/06*

U.S. Cl. 364—200 **20 Claims**

1. In a data-processing system having a plurality of units and a data-transmission channel of the multiple-conductor bus type to which all said units are connected through interface circuits, at least one such unit being a master-type unit which is capable of requesting and acquiring instantaneous control of the transmission channel in order to address at least one other unit of said system and to initiate exchanges of data in said channel, and at least one such unit being a slave-type unit which can be addressed by said master-type unit, and a device for granting instantaneous control of said channel to said master-type unit which has requested instantaneous control of said channel, a method of transmitting digital data between said units comprising the steps of:

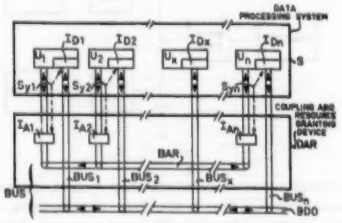
requesting, by said master unit, control of said channel;

granting, by said granting device, control of said channel to the master unit requesting control;

providing, by the master unit having obtained control of the channel, control information in the form of control signals on said channel by causing three control signal lines of said channel to assume desired states defining one of three possible different addressing modes, the addressing modes being mutually exclusive, each said control signal line being capable of assuming either a first or a second binary state, the status of the three control signal lines defining the addressing modes as follows:

setting the first control signal line to said first binary state defining an addressing mode permitting a point-to-point data transfer between the master-type unit which has acquired instantaneous control of the transmission channel and a slave-type unit addressed by said master-type unit;

setting the second control signal line to said first binary state



defining an addressing mode permitting a point-to-point data transfer between the master-type unit which has acquired instantaneous control of the transmission channel and a second master-type unit addressed by the first master-type unit;

setting the third control signal line to said second binary state simultaneously with setting the first or second control signal line to said second binary state defining an addressing mode ,permitting a general broadcast data transfer from the master-type unit which has acquired instantaneous control of the transmission channel to at least all the other master-type units of said system, all of said units being addressed simultaneously;

addressing one or more units in accordance with the addressing mode defined; and

transmitting digital data from the master unit having acquired control of the channel on said channel in accordance with the addressing mode defined.

4,495,574

BIDIRECTIONAL MULTI-MODE DATA TRANSFER BUS SYSTEM

Matthias Hofstetter, Flawil, Switzerland, assignor to Siemens-Albis AG, Zurich, Switzerland

Filed Jun. 24, 1982, Ser. No. 391,705

Claims priority, application Switzerland, Jul. 10, 1981, 4529/81

Int. Cl.[3] **G06F** *3/04, 5/04*

U.S. Cl. 364—200 **10 Claims**

1. A bus system for the transfer of data between a central station and at least two circuit modules, comprising:

an interface circuit connected with said central station and containing:

a microcomputer for controlling data transfer via said interface circuit;

signal transfer lines;

a coupler circuit;

said coupler circuit containing:

a coupler sub-circuit for selecting said signal transfer lines;

a parallel-serial converter;

a serial-parallel converter;

said parallel-serial converter effecting the transfer of data between said microcomputer and said coupler circuit in a first direction of transfer;

said serial-parallel converter effecting the transfer of data between said microcomputer and said coupler circuit in a second, opposed direction of transfer;

a plurality of sub-units connected with said interface circuit;

each of said plurality of sub-units containing:

a respective switching stage;

control means for controlling said switching stage for determining the direction of transfer of the data;

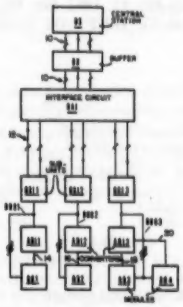
said coupler circuit being connected via said signal transfer lines with respective ones of the switching stages provided for said sub-units;

a control logic circuit operatively connected with said switching stage of the corresponding sub-unit;

a bus connected with said circuit modules;

each sub-unit containing:

a status-word generator for generating signals indicating a mode of operation; and



a first shift register for data signals;

said switching stage controlling via the control logic circuit said status-word generator and said first shift register in such a manner that the data present at the switching stage is delivered via said first shift register to said bus connected with the circuit modules and in such manner that the data present at the circuit modules is delivered via said bus and the status word generator connected therewith to the switching stage;

each sub-unit further containing:

a second shift register for said signals indicating the mode of operation; and

a third shift register for signals controlling the mode of operation;

said second shift register being incorporated between one branch of the switching stage and an output of the status-word generator; and

said third shift register being incorporated between another branch of the switching stage and the control logic circuit.

4,495,575

INFORMATION PROCESSING APPARATUS FOR VIRTUAL STORAGE CONTROL SYSTEM

Kazutoshi Eguchi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 12, 1982, Ser. No. 441,095

Claims priority, application Japan, Dec. 9, 1981, 56-198185

Int. Cl.[3] **G06F** *13/00*

U.S. Cl. 364—200 **7 Claims**

1. An information processing apparatus for a virtual storage control system, comprising:

a main memory;

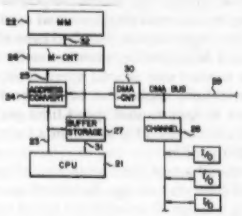
buffer storage means including a directory and a data storage

region for storing a copy of part of storage data in said main memory;

address converting means for converting a virtual address into an effective address;

a central processing element for simultaneously supplying the virtual address to said buffer storage means and to said address converting means is order to access said main memory;

a channel for simultaneously supplying the virtual address to said buffer storage means and to said address converting means in order to access said main memory; and



read means for reading data from the corresponding data storage region when an address information designated by the virtual address supplied from said central processing element or from said channel is registered in the directory of said buffer storage means and for reading data from said main memory using the effective address obtained from said address converting means which is accessed at the same time as said buffer storage means when the address information is not registered in the directory of said buffer storage means.

4,495,576

DEVICE AND METHOD FOR ACCURATELY CONTROLLING AUTOMATIC TRANSMISSION WITH LOCKUP CLUTCH

Hiroshi Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Sichi, Japan

Filed Apr. 5, 1982, Ser. No. 365,306

Claims priority, application Japan, Jul. 21, 1981, 56-114062

Int. Cl.³ B60K *41/08, 41/22;* **G06F** *15/20*

U.S. Cl. 364—424.1 **8 Claims**

1. In a vehicle transmission comprising a gear transmission mechanism which comprises a plurality of first hydraulic fluid pressure activated friction engaging mechanisms and which includes a plurality of shift stages including a plurality of forward speed stages according to selective supply of hydraulic fluid pressure to said first hydraulic fluid pressure activated friction engaging mechanisms, said transmission also comprising a torque converter and a lock-up clutch which comprises at least one second hydraulic fluid pressure activated friction engaging mechanism, said torque converter functioning when said lock-up clutch is disengaged but being locked-up when said lock-up clutch is engaged so as to provide direct transmission of rotational power through said torque converter according to selective supply of hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism, a transmission control method, comprising the steps of:

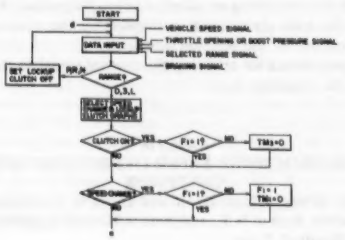
(a) determining which of said plurality of shift stages should be currently provided by said gear transmission mechanism according to current operational conditions of said vehicle;

(b) selectively controlling supply of activating hydraulic fluid pressure to at least two of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to selectively engage one of said plurality of shift stages in accordance with the determination of step (a), and altering said selectively controlled supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between selected ones of said plurality of shift stages in accordance with the determination of step (a);

(c) selectively controlling supply of hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be engaged or disengaged in accordance with operational conditions of said vehicle and in accordance with said shifting between said selected ones of said shift stages;

(d) time shifting in a first programmed manner between a time point of said determination with regard to said shift stages and a time point of commencement of said alteration of said selective control of supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between said selected ones of said plurality of shift stages;

MANUAL SHIFT RANGE	SPEED STAGE	SOLENOID			FRICTION ENGAGING MECHANISM							ONE WAY CLUTCH		
		No.1	No.2	No.3	C_0	B_0	C_1	C_2	B_1	B_2	B_3	F_0	F_1	F_2
D	1st	E	n	(E)	E		E					E		E
	2nd	E	E	(E)	E		E				E	E	E	
	3rd	n	E	(E)	E		E	E			E	E		
	O/D	n	n	(E)		E	E	E		E				
3	1st	E	n	(E)	E		E					E		E
	2nd	E	E	(E)	E		E		E	E		E	E	
	3rd	n	E	(E)	E		E	E				E		
L	1st	E	n	n	E		E				E	E		E
R	Rev	n	n	n	E			E			E	E		
P, N		n	n	n	E							E		



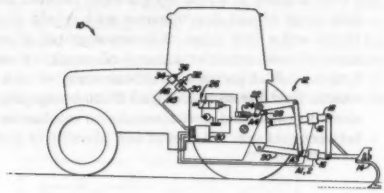
(e) time shifting in a second programmed manner between a time point of said determination with regard to said shift stages and a time point of commencement of said selective control of supply of activated hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be disengaged; and

(f) time shifting in a third programmed manner between a time point of commencement of said alteration of said selective control of supply of activating hydraulic fluid pressure to at least some of said first hydraulic fluid pressure activated friction engaging mechanisms to cause said gear transmission mechanism to shift between said selected ones of said plurality of shift stages and a time point of commencement of said selective control of supply of activated hydraulic fluid pressure to said second hydraulic fluid pressure activated friction engaging mechanism to cause said lock-up clutch to be engaged.

4,495,577
MODEL REFERENCE ADAPTIVE IMPLEMENT CONTROL

Richard D. Strunk, East Moline; Robert E. Kasten, Moline, both of Ill., and Richard V. Monopoli, deceased, late of Hadley, Mass. (by Eileen F. Monopoli, executrix), assignors to Deere & Company, Moline, Ill.

Filed Aug. 6, 1982, Ser. No. 405,835
Int. Cl.³ A01B *63/112*
U.S. Cl. 364—424 **12 Claims**



1. In a control system for a vehicle having connecting means for attaching a ground-penetrating implement thereto and actuating means for raising and lowering the connecting means in response to control signals applied to an input thereof to vary the ground penetration of the implement, the improvement wherein the control system comprises:

means for generating a load error signal derived from sensed implement draft force;

means for generating a position signal representing sensed implement position;

adaptive means responsive to sensed operating parameters of the implement and connecting means for generating a variable gain signal, the variable gain signal automatically varying to compensate for changes in implement and ground conditions;

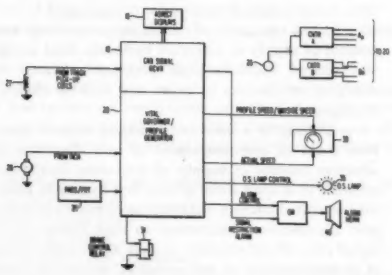
means for generating an adaptive control signal as a function of the load error signal multiplied by the variable gain signal and of the position signal; and

applying means for applying the control signal to the input of the actuating means.

4,495,578
MICROPROCESSOR BASED OVER/UNDER SPEED GOVERNOR

Henry C. Sibley, Adams Basin, and David B. Rutherford, Jr., Scottsville, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 22, 1981, Ser. No. 313,926
Int. Cl.³ B60T *8/02*
U.S. Cl. 364—426 **17 Claims**



1. Vehicle carried control apparatus to control vehicle motion in the transition from a first speed limit to a second, lower, speed limit, comprising:

signal receiving means for receiving and registering wayside imposed speed limits,

vehicle speed measuring means for producing a signal representative of vehicle speed,

governor means responsive to said signal receiving means and to said vehicle speed measuring means for imposing a braking force or a requirement for a braking operation on said vehicle if said vehicle speed is greater than said wayside imposed speed limit,

wherein the improvement comprises:

speed profile generating means responsive to said signal receiving means receiving a second speed limit at a time when a first higher speed limit had been effective to generate a speed limit profile, monotonically decreasing from said first toward said second speed limit, and

means to withhold application of said braking force or requirement so long as said speed limit profile is generated and said vehicle speed is less than a current value of said speed limit profile.

6. A transitional speed limit generator responsive to a pre-existing speed limit and to signals indicative of vehicle travel for generating a series of transitional speed limits comprising:

first tachometer channel means for producing signals indicative of vehicle travel,

first processor means for generating a first time series of transitional speed limits in response to said first tachometer channel means,

second tachometer channel means for producing signals indicative of vehicle travel,

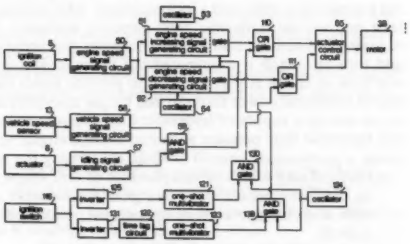
second processor means for generating a second time series of transitional speed limits in response to said second tachometer channel means,

comparison means for comparing each transitional speed limit of said first series with a corresponding transitional speed limit from said second series to validate said transitional speed limit of said first series, but only if a relationship between sequential pairs of speed limits from said first and second series cycles between a first and a second relation.

4,495,579
ACTUATOR CONTROL SYSTEM FOR AN ENGINE IDLING SPEED GOVERNOR

Tatsuhisa Fukushima, Tama; Yoshiaki Kasai, Kiyose, and Mitsuo Nakamura, Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 334,059
Claims priority, application Japan, Dec. 27, 1980, 55-187179
Int. Cl.³ G05D *13/02;* **F02M** *3/00;* **F02D** *31/00*
U.S. Cl. 364—431.07 **5 Claims**



1. In an actuator control system for an engine idling speed governor of an internal combustion engine mounted on a vehicle having an ignition switch including a closed position and an open position, means for producing ignition pulses, actuator means for actuating a throttle valve in an induction passage of the engine, and a spring arranged to bias said throttle valve in

the closing direction, the improvement of the system comprising:

means responsive to said ignition pulses for producing an engine speed signal have a magnitude corresponding to said ignition pulses;

means comprising a vehicle speed sensor for producing an output voltage having a magnitude associated with the speed of the vehicle;

means comprising an idling signal generating circuit for producing an idling signal, indicating idling operation of said engine;

means comprising a vehicle speed signal generating circuit for producing a first logic signal when the magnitude of the output voltage of the vehicle speed sensor is lower than a predetermined value related with a corresponding vehicle speed;

first signal generating circuit means responsive to said engine speed signal, said first logic signal and said idling signal for producing an engine speed increasing signal when the magnitudes of said engine speed signal is higher than a lower limit magnitude related with an engine speed, and when said first logic signal and said idling signal are activated;

second signal generating circuit means responsive to said engine speed signal, said first logic signal and said idling signal for producing an engine speed decreasing signal when the magnitude of said engine speed signal is lower than an upper limit magnitude related with a second engine speed, and when said first logic signal and said idling signal are activated; and

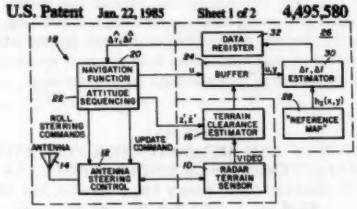
means comprising an actuator control circuit operatively connected to said actuator means and responsive to said engine speed increasing signal for opening the throttle valve to increase idling speed, and responsive to said engine speed decreasing signal for closing the throttle valve to decrease idling speed.

4,495,580

NAVIGATION SYSTEM

Larry R. Keearns, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Mar. 30, 1981, Ser. No. 248,803
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—450 **8 Claims**



1. Apparatus for determining the position and velocity of a vehicle independent of the nature of the vehicle path over a given terrain, comprising:

a navigation system generating output data representing the measured position, altitude and vertical velocity of the vehicle,

terrain clearance detector means receiving the vehicle altitude and vertical velocity outputs and generating output data representing the observed vehicle clearance above the terrain along the vehicle path,

means for storing data representing a terrain elevation map as a mathematical function,

a computational processor responsive to the position data from said navigation system, output data from said terrain clearance detector means, and data representing the terrain elevation map to generate correction vehicle velocity and vehicle position signals, and

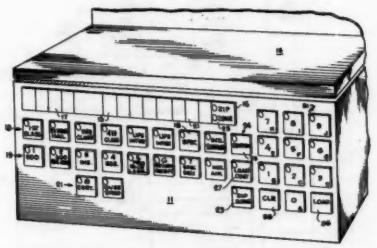
means for inputting the correction signals to said navigation system to generate corrected vehicle navigation signals.

4,495,581

USER PROGRAMMABLE POSTAL RATE CALCULATOR

James M. Piccione, 20958 Upper East Zayante Rd., Los Gatos, Calif. 95030

Filed Oct. 19, 1981, Ser. No. 312,530
Int. Cl.³ G06F *15/20*; G06G *19/40*
U.S. Cl. 364—466 **14 Claims**



1. An improved ZIP to zone converter for a postal scale or the like comprising,

first memory means containing a representation of a map of a geographic area, said area being divided into an irregular grid quad pattern, with grid quads generally corresponding to the geographic areas represented by the most significant digits of ZIP codes, each grid quad having X, Y digital coordinates, said first memory means for storing the X, Y digital coordinates of said grid quads,

second memory means for storing the most significant digits of an originating ZIP code and for storing ranges of distance related values corresonding to each postal zone,

third memory means for storing control information,

data entry means for entering the most significant digits of a destination ZIP code,

microprocessor means connected to a data bus, said first, second and third memory means and said data entry means connected to the microprocessor means via the data bus for converting the most significant digits of both the originating and destination ZIP codes into X, Y coordinates, computing a value for a distance function of the X, Y coordinates which identifies one of said ranges of distance related values and identifying the postal zone corresponding to said value.

4,495,582

CONTROL SYSTEM FOR PRE-SETTING AND OPERATION OF A PRINTING PRESS AND COLLATOR

Robert A. Dessert; Richard A. Gaspar; Richard T. Laubach; Dinesh G. Punater, all of Dayton, and Ralph E. Barrera, Casstown, all of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 4, 1982, Ser. No. 385,181
Int. Cl.³ B65H *43/00*; G06F *15/46*
U.S. Cl. 364—469 **26 Claims**

2. A process for manufacturing multi-part forms using at least one web press having one or more printing stations and one or more processing stations at which operations are performed on webs in registry with a series of printed images produced at a printing station, and also using a collator having a collating station at which job related webs from said press or presses are assembled in registry and having one or more processing stations at which additional operations are performed on the assembled webs in registry with a series of printed images thereon;

the steps comprising

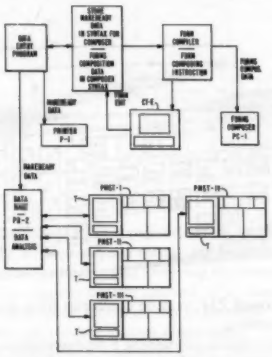
(a) creating a digital job description of a form including the

location and content of printed images on the several parts of the form and/or the location of process items such as perforations, holes, cuts or other markings on one or more parts of the form,

(b) storing said job description in a digital memory with a job identifying number,

(c) creating a digital description of the images to be printed on the parts of the form,

(d) storing said image descriptions in the memory associated with the job identifying number,



(e) using the digital job description from the memory to pre-set the printing sections and processing sections of a press for each part of the form,

(f) producing the several parts of the form on the press or presses and supplying the parts to the collator,

(g) using the digital job description to pre-set the processing stations of the collator, and

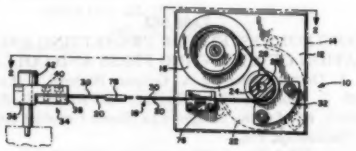
(h) assembling and completing the processing of the several parts on the collator into a quantity of multi-part forms sufficient to complete the job.

4,495,583

APPARATUS AND METHOD FOR ENCODING POSITIONS OF WEB PRESS MACHINES

Dinesh G. Punater, Dayton, Ohio, assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 4, 1982, Ser. No. 385,182
Int. Cl.³ G06F *15/46*; G06G *7/78*
U.S. Cl. 364—471 **15 Claims**



1. An apparatus for encoding a lateral or circumferential setting within a web press of a laterally or circumferentially adjustable machine for operating on a web, said machine having an element which moves linearly as said machine is adjusted, comprising:

a linkage connectable to said linearly moving element for linear movement therewith;

means for generating an electric signal operatively connected to said linkage for operation in response to linear movement of said linkage;

means defining a reference point for describing the setting of said machine; and

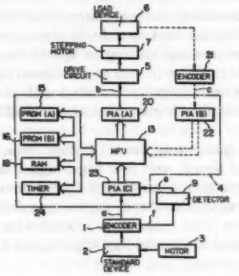
means for computing a code in response to said signal generated by said signal generating means for designating the setting of said machine with respect to said reference point.

4,495,584

INTERMITTENT DRIVING SYSTEM FOR SYNCHRONIZING CONTROL OF CONVEYOR AND DISPENSING SYSTEMS

Toshio Yoshida, Yokohama, Japan, assignor to Toyo Shokuhin Kikai Kabushiki Kaisha, Yokohama, Japan

Filed Mar. 22, 1982, Ser. No. 360,391
Claims priority, application Japan, Mar. 30, 1981, 56-047904
Int. Cl.³ G05B *15/02*; G06F *15/46*
U.S. Cl. 364—479 **6 Claims**



1. A drive control synchronizing system for synchronizing the control of conveyor systems and dispensing systems;

standard position reference means providing a standard position reference;

encoding means detecting and encoding an output from said standard reference means;

rate detecting means receiving an output from said encoding means for detecting the rate of operation of said standard reference means;

digital processing means receiving inputs from said encoding means and said rate detection means;

at least one mechanical load means;

motor means for driving said mechanical load means;

said digital processing means generating rate pulse signals to directly control operation of said motor means whereby operation of said mechanical load means is synchronized with operation of said standard reference means.

4,495,585

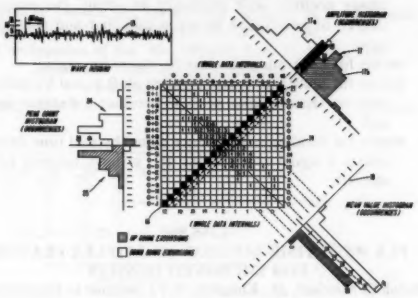
METHOD OF AND APPARATUS FOR INDICATING CHARACTERISTICS OF UNDULATING DATA

William H. Buckley, 15308 Emory La., Rockville, Md. 20853

Filed Jul. 8, 1981, Ser. No. 281,302
Int. Cl.³ G01R *23/16*
U.S. Cl. 364—487 **51 Claims**

1. A method of indicating characteristics of undulating data having variations with oppositely directed peak values, the characteristics being indicated on a display having first and second mutually orthogonal coordinate directions, comprising the steps of determining the oppositely directed consecutive peak values of each variation, assigning each variation to a coordinate position on the display, the coordinate position in the first and second directions being respectively determined by the initial and final peak values of the variation, accumulating the variations having like initial and final peak values so an indication of the accumulated variations is displayed on the coordinate positions of the display, the display having discrete values in the first and second directions associated with different initial and final peak values, whereby a series of bins is formed in the first and second directions, the coordinate posi-

tions in the first and second directions being substantially determined by assigning each variation to an individual bin, the variations being accumulated by summing the number of variations assigned to each bin, each bin having a dead band associated with it, and in response to first and second adjacent like



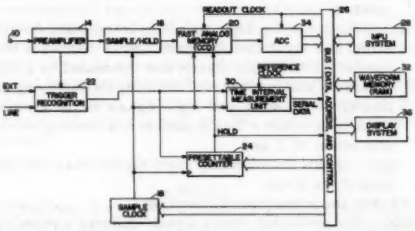
directed variations being associated with the same bin except for one of the values of the second variation differing from a corresponding value of the first variation by an amount less than the dead band assigning the second variation to the same bin as the first variation.

4,495,586

WAVEFORM ACQUISITION APPARATUS AND METHOD

Roland E. Andrews, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 29, 1982, Ser. No. 402,872
Int. Cl.³ H02K *13/02*
U.S. Cl. 364—487 **2 Claims**



1. A method of acquiring an equivalent-time waveform over a plurality of cycles of a repetitive input signal, comprising the steps of:

taking one or more samples at equally spaced intervals of a sample clock along each cycle of said plurality of cycles;

measuring the time difference between a fixed point on said each cycle and a next occuring sample clock;

computing from said measured time difference an address of a memory for each of said samples, wherein said computed addresses are at equally-spaced intervals with respect to each other for each cycle, but shifted a number of addresses proportional to said time difference; and

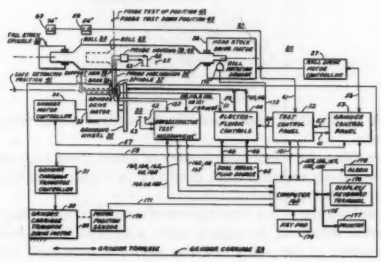
storing said samples in said memory at said computed addresses.

4,495,587

AUTOMATIC NONDESTRUCTIVE ROLL DEFECT INSPECTION SYSTEM

Arcade J. Plante, Center Valley, and Richard F. Wetzel, Bath, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 8, 1981, Ser. No. 328,345
Int. Cl.³ G01N *27/82, 29/04*
U.S. Cl. 364—507 **6 Claims**



1. A computer-based nondestructive testing system for automatically inspecting roll surface conditions of a rolling mill roll rotatable in a test fixture and operable with a carriage movable substantially parallel and lengthwise of the test roll longitudinal axis, said system comprising:

(a) nondestructive test probe means mounted on the movable carriage for generating at least one roll surface anomoly test signal;

(b) means for automatically spacing the test probe means (a) from the roll surface by a gap having a fluid therein;

(c) carriage movement sensor means on the carriage for generating a test probe means position signal relative to the distance along the roll length the test probe means has been carried by the movable carriage;

(d) roll rotation sensor means in the rotatable test fixture for generating a roll circumference signal;

(e) nondestructive test instrument means for processing at least one roll surface anomaly test signal from test probe means to produce an amplitude-variable roll surface defect signal; and

(f) computer means for processing the amplitude-variable roll surface defect signal of (e), the test probe means position signal of (c) and the roll circumference signal of (d) comprising:

(i) means for (1) converting the amplitude-variable roll surface defect signal into digital form, (2) detecting a digital defect signal peak and (3) allocating the digital defect signal peak into one of several preset levels in a memory device;

(ii) means for (1) converting the test probe means position signal into digital form and (2) storing the digital position signal in the memory device of (f)(i)(3);

(iii) means for (1) converting the roll circumference signal into digital form, and (2) storing the digital roll circumference signal in the memory device of (f)(i)(3); and

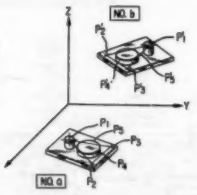
(iv) means for coordinating the defect signal, test probe position signal and roll circumference signal for each inch of length of test roll surface scanned.

4,495,588

ROBOT LOCUS CONTROL SYSTEM

Satoru Nio; Shinobu Sato; Hajime Fujii, all of Kitakyushu, and Toyoji Hamashima, Nakama, all of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

Filed Mar. 18, 1982, Ser. No. 359,548
Claims priority, application Japan, Mar. 26, 1981, 56-44275
Int. Cl.³ G05B *13/00*
U.S. Cl. 364—513 **12 Claims**



1. A method for robot arm locus control comprising the steps of:

a. teaching the robot coordinates of a first three representative points and first work points of an object to be worked on by the robot;

b. teaching the robot coordinates of a second three representative points of the object when a change in the relative position of the robot and the object occurs, said second representative points corresponding to said first representative points;

c. calculating coordinates of second work points from data representative of the relative positions of said first representative points and first work points and said second representative points, so that said second work points define a locus at a position different than that of said first work points, said second work points corresponding to said first work points;

d. using said coordinates of said second work points to provide commands for the robot; and

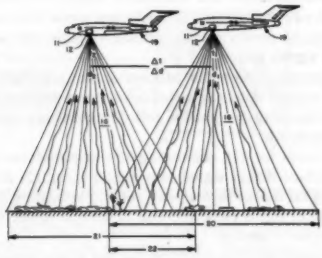
e. controlling the robot to follow said commands.

4,495,589

AIRCRAFT GROUND VELOCITY DETERMINATION SYSTEM

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Co., New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,996
Int. Cl.³ G01P *3/36*
U.S. Cl. 364—565 **31 Claims**



6. Apparatus for determining the ground velocity of an aircraft comprising:

at least one optical image sensor, which includes a plurality of image forming elements, carried by the aircraft;

means for enabling said elements to form a first optical image of a first area of the earth's surface and, after a time delay, enabling said elements to form a second optical image of a second area of the earth's surface which overlaps in part with said first area;

means for controlling the length of time said elements are enabled and said time delay;

means for comparing said first image with said second image to produce a position shift signal representing the relative image position shift necessary to obtain the maximum degree of correlation between said first and second images;

means for generating an altitude correction signal;

means for multiplying said position shift signal by said altitude correction signal so as to produce a distance signal; and

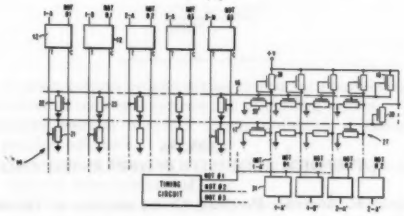
means for dividing said distance signal by said time delay to obtain a signal representing the ground velocity of the aircraft.

4,495,590

PLA WITH TIME DIVISION MULTIPLEX FEATURE FOR IMPROVED DENSITY

Ralph C. Mitchell, Jr., Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 221,595, Dec. 31, 1980, abandoned. This application Oct. 14, 1983, Ser. No. 542,230
Int. Cl.³ H03K *19/20*
U.S. Cl. 364—716 **3 Claims**



1. In a PLA of the type having

an array having input lines, output lines, and internal lines crossing over the input and output lines, and interconnection elements in a predetermined pattern at crossover points of the array,

means for supplying logic signals to be operated on by the array, and input circuits connected to receive a binary number of said logic signals and connected to a binary number of said input lines of the array for supplying partitioning functions of said logic signals to the connected input lines, where a binary number is a non-negative integral power of 2, and

output circuits for receiving logic signals from the output lines of the array,

wherein the improvement comprises,

means for producing timing signals defining a plurality of timing phases,

means connecting each of said timing signals to a disjunct plurality of said input circuits, whereby each timing phase corresponds to a set of input lines of the array, and means in each input circuit responsive to its timing signal to enable the input circuit to supply said partitioning function and responsive to the complement of its timing signal to inhibit the input circuit, and

means connecting said timing signals to said output circuits and means in each output circuit responsive to its phase of the timing signals to enable the associated output circuit to receive and store a signal on the associated output line and responsive to the complement of said corresponding phase to inhibit the output circuit,

whereby the internal lines of the PLA are shared by a plurality of sets of input lines, each set having a selected logic

function that is enabled at a separate time phase in the operation of the array.

4,495,591

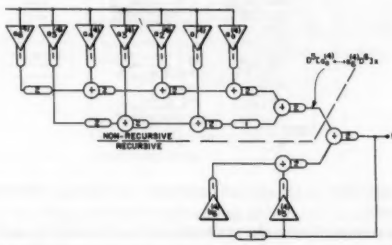
PIPELINED DIGITAL FILTERS

Herschel H. Loomis, Jr., Davis, Calif., assignor to The Regeants of the University of California, Berkeley, Calif.

Continuation of Ser. No. 238,812, Feb. 27, 1981,. This application Mar. 26, 1984, Ser. No. 574,297

Int. Cl.³ G06F *15/34, 1/02*

U.S. Cl. 364—724 **7 Claims**



1. An improvement in a digital filter having a non-recursive portion and a recursive portion, wherein said digital filter has a function $y=a_0x+a_1D^1x+a_2D^2x+\ldots a_mD^mx-(b_1D^1+\ldots+b_nD^ny)$, in which the terms containing a_m represent the non recursive portion and a_0, $a_1 \ldots a_m$ are constants, the terms containing $b_1 \ldots b_n$ represent the recursive portion and $b_1 \ldots b_n$ are constants, and D^m and D^n are delay operators, and wherein said digital filter operates at a clock frequency f_s, said clock frequency f_s also being the frequency at which an input signal x to said digital filter has been sampled, said non-recursive portion and said recursive portion each having at least one 1-stage parallel multiply-add means with one stage for multiplying digital signals by said constants and for adding two digital signals and for delaying digital signals by one clock period, wherein the improved digital filter comprises:

(a) said parallel muyltiply-add means in said recursive portion including parallel pipeline multiply-add means with more than one stage for multiplying digital signals by said constants and for adding two digital signals.

(b) said improved digital filter providing a higher order function which is operationally the same as said function y but delayed by a number D of sample times; and

(c) said improved digital filter being operable at a clock frequency which is greater than f_s and determined by the number of stages in said parallel pipeline multiply-add means.

4,495,592

ELECTRONIC DATA PROCESSING APPARATUS WITH EQUATION OPERATING SYSTEM HAVING IMPLIED MULTIPLICATION OF TWO HIERARCHICAL RANKS

David Caldwell; Linda J. Ferrio, and Arthur C. Hunter, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1982, Ser. No. 381,985

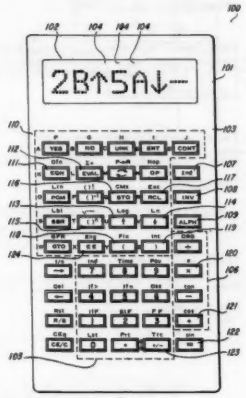
Int. Cl.³ G06F *7/52*

U.S. Cl. 364—754 **9 Claims**

1. An electronic data processing apparatus comprising:

an input means for entering data processing functions including numeric data and a plurality of operational commands corresponding to data processing operations;

an arithmetic means connected to said input means for performing entered data processing functions according to the respective hierarchial ranks of entered operational commands and generating a numeric result, said arithmetic means including an implied multiplication means for performing an implied multiplication of a first hierarchial rank when successive inputs include one of a prefix set followed by one of a first suffix set and for performing an implied multiplication of a second hierarchial rank lower than said first hierarchical rank when successive inputs



include one of said prefix set followed by one of a second suffix set; and

output means for generating an operator perceivable indication of said numeric result generated by said arithmetic means.

4,495,593

MULTIPLE BIT ENCODING TECHNIQUE FOR COMBINATIONAL MULTIPLIERS

Frederick A. Ware, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1982, Ser. No. 394,234

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—757 **5 Claims**

1. An apparatus for multiplying first and second binary operands each having a nominal length of N bits where one of said bits of each operand may designate the sign of said operand and comprising:

means for grouping pairs of bits of said first binary operand;

means for supplying a first carry in signal which is a 0;

means for encoding the first pair of bits of said first binary operand and said first carry-in signal into one member of a set of only four multiplier digits and a first carry-out signal;

means for passing the carry-out signal of one pair of bits of said first binary operand to the next subsequent pair of bits as the carry-in signal of said next subsequent pair of bits;

means for encoding said subsequent pairs of bits and said subsequent carry-in signals into a member of said set of only four multiplier digits and a further carry-out signal;

means for generating the partial products of said second binary operand and one of said four multiplier digits of said encoding set for each pair of bits of said first binary operand;

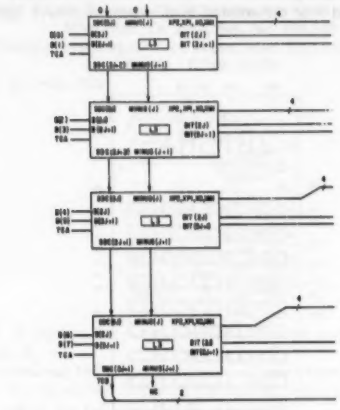
means for extending said sign bit of said partial products;

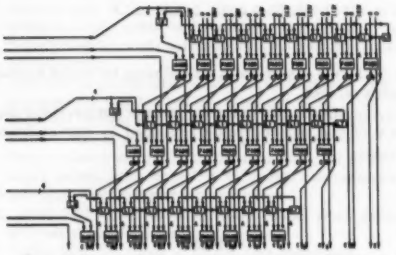
means for shifting said sign extended partial products by an amount equal to the weight of the less significant bit of the corresponding pair of bits of said first binary operand;

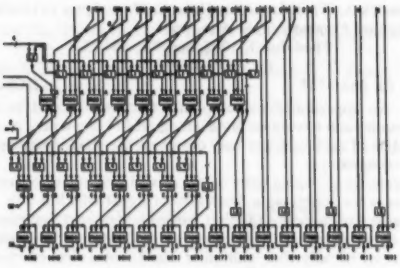
means for summing said shifted sign extended partial products; and

means for shifting said second binary operand by an amount equal to the weight of the more significant bit of the most

significant pair of bits of said first binary operand, and adding said shifted second binary operand to said sum of







shifted sign extended partial products when the final carry-out signal is a 1.

4,495,594

SYNCHRONIZATION OF CRT CONTROLLER CHIPS

Lewis C. Eggebrecht, Rochester, Minn.; David A. Kummer, Boca Raton, and Jesus A. Saenz, Coral Springs, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,368

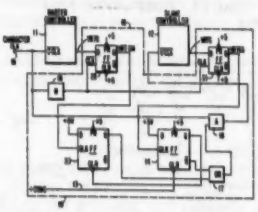
Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **2 Claims**

1. In a system having a source of clock signals, a processor generating commands, an input/output device, and a first and second independently actuable controller for applying a counterpart first and second non-overlapping functionally distinct set of control signals to said device, each controller generating its counterpart set of control signals periodically conditioned by a processor command and in response to a predetermined number of clocking signals, wherein the improvement comprises means for synchronizing the controllers including:

gating means reponsive to processor command for applying clock signals selectively to said first and second controllers;

means for applying a subset of control signals from the first



controller to the second controller as a timing reference; and

means responsive to the generation of the first and second set of control signals for selectively enabling or disabling the application of clocking signals to the controllers so as to enforce coincident generation of said first and second set of control signals.

4,495,595

METHOD AND SYSTEM OF LOOP TRANSMISSION

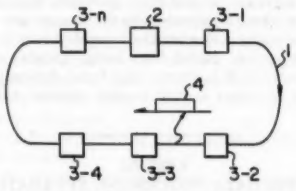
Susumu Nakayashiki, Yokohama; Isao Nakada; Masahiko Kida, both of Hadano; Toyokazu Hashimoto, Kanagawa, and Kazuo Yagyu, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,539

Claims priority, application Japan, Apr. 3, 1981, 56-49318; Jan. 29, 1982, 57-11640

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—900 **12 Claims**

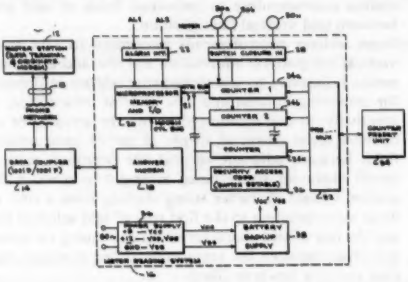


1. A method of loop transmission for a loop transmission system wherein a plurality of stations are coupled to a communication loop, comprising the steps of allotting to each station successively a right to transmission by detection in each station of a first specific signal pattern sent on said communication loop from a specified station when data exchanging is to be effected between the stations through the loop, sending from a station to the loop said first specific signal pattern when the sending of an exchanging data frame from that station on the loop is completed in that station, sending a second specific signal pattern to the loop from said specified station before sending said first specific signal pattern to the loop from the specified station, and sending said second specific signal pattern to the loop from a station before the exchanging data frame is sent from that station other than said specified station.

4,495,596
DATA ACCUMULATOR AND TRANSPONDER WITH POWER BACK-UP FOR TIME OF DAY CLOCK

Felice M. Sciulli, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,531
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 26 Claims



1. A timing system for maintaining an accurate manifestation of time in the event of the failure of a primary power source, said timing system comprising:

(a) clock means energizable for generating a train of clock pulses;

(b) a secondary power source;

(c) means responsive to the failure of the primary source for applying said secondary power source to energize said clock means to produce said train of clock pulses;

(d) primary memory means for receiving and accumulating said train of clock pulses to provide a first manifestation of time;

(e) secondary memory means energizable by said secondary power source for receiving and accumulating said train of clock pulses as an accumulated count providing a second manifestation of time; and

(f) transfer means responsive to the restoration of the primary power source for transferring said second time manifestation as stored in said secondary memory means to said primary memory means, whereby said second time manifestation is indicative of the time that the primary power source is restored.

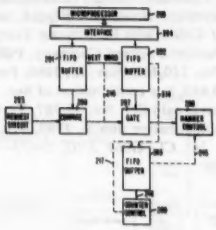
4,495,597
MICROPROCESSOR-CONTROLLED ADAPTER CIRCUIT FOR REAL-TIME CONTROLS, IN PARTICULAR FOR PRINT HAMMER CONTROLS

Jan Barthel, Holzgerlingen, and Hermann R. Bublitz, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 2, 1982, Ser. No. 403,687
Claims priority, application European Pat. Off., Aug. 6, 1981, 81106153.0
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—900 11 Claims

1. A microprocessor-controlled adapter circuit for real time controls of output values, characterized in

that two asynchronously driven FIFO buffers (FIFO=-FIRST IN, FIRST OUT) are provided, one of which can be loaded with time values from the microprocessor, at which a control process is to be effected, and the other one of which can be loaded from the microprocessor with control information associated with these time values (such as address of an element to be controlled, type of control process), and that a request circuit is provided, by means of which the time values are successively read from the first FIFO buffer and are fed to a gate circuit for switching the control information associated with these

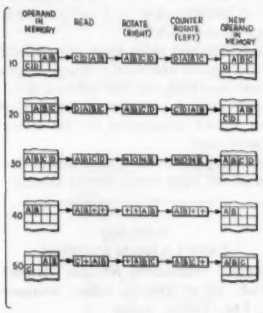


time values from the second FIFO buffer for controlling the output values.

4,495,598
COMPUTER ROTATE FUNCTION

Richard Vahlstrom, Villa Park; Dennis R. Keats, Irvine, and Peter T. Lee, Laguna Niguel, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 29, 1982, Ser. No. 427,947
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—900 13 Claims



1. In a computer system comprising central processing unit (CPU) means which operates on multi-byte word blocks and memory means, a rotation system comprising:

rotation controller means which provide output command information to reorder bytes in a multi-byte word block in response to input information describing the relative displacement of an end byte of a multi-byte word block from a double word boundary byte memory position;

byte shifting means responsive to the command information which consecutively reorder the bytes in the multi-byte word block; and

means to transfer reordered multi-byte word blocks between the CPU means and the memory means.

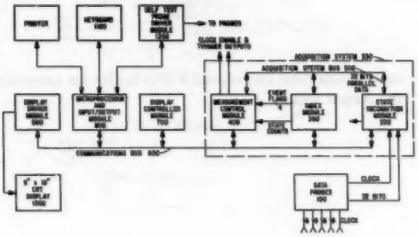
4,495,599
LOGIC STATE ANALYZER WITH SEQUENTIAL TRIGGERING AND RESTART

George A. Haag, Colorado Springs; O. Douglas Fogg, Loveland; Gordon A. Greenley; Steve A. Shepard, both of Colorado Springs, all of Colo., and F. Duncan Terry, Meridan, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 210,462, Nov. 25, 1980, Pat. No. 4,373,193, said Ser. No. 210,462, is a continuation of Ser. No. 75,787, Sep. 17, 1979, abandoned, said Ser. No. 75,787, Division of Ser. No. 828,138. This application Jan. 6, 1983, Ser. No. 456,155

Int. Cl.[3] G06F *3/05, 3/153*

U.S. Cl. 364—900 8 Claims



1. Apparatus for selecting, storing and displaying a set of logic states occurring in a collection of digital signals, the apparatus comprising:

first control means for designating a selected sequence of logic states $SS_1, \ldots, SS_N$;

second control means for designating a selected logic state as a trigger state;

input means coupled to receive the collection of digital signals for performing signal conditioning thereon according to preselected thresholds to produce a collection of conditioned logic signals;

sequence detection means coupled to at least the collection of conditioned logic signals and to the first and second control means for producing a trigger signal upon the occurrence of the trigger state subsequent to the occurrence of the state SS_n, whose occurrence is in turn subsequent to its predecessor, and so on, subsequent to the occurrence of the state SS_1,

storage means coupled to at least the collection of conditioned logic signals and to the trigger signal for storing logic states occurring in the collection of conditioned logic signals until a preselected number of logic states have been stored subsequent to the occurrence of the trigger signal; and

display means coupled to the storage means for displaying an indication of the logic states stored therein.

4,495,600
TABULATION SYSTEM

Yoshiyasu Kikuchi; Masamichi Shutoh; Hitoshi Miyai, and Hidetoshi Itoh, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 190,927. This application Jun. 28, 1983, Ser. No. 508,577

Claims priority, application Japan, Sep. 28, 1979, 54-124967; Oct. 2, 1979, 54-127621; Oct. 5, 1979, 54-129210

Int. Cl.[3] G06F *7/00, 3/14;* B41J *21/00*

U.S. Cl. 364—900 4 Claims

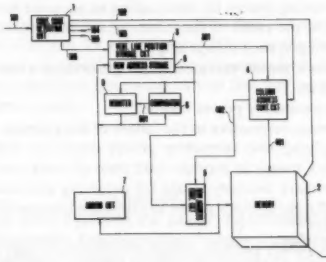
1. A tabulation system for delivering column and row address information to a medium, said column and row information providing for the tabulation of serial character strings and horizontal and vertical ruled lines to produce a selected array thereof in response to input coded information defining said array, said system comprising

detecting means responsive to said input coded information for providing first data information concerning the positions of said vertical and horizontal ruled lines and for providing second data information concerning said serial character strings to said medium;

means responsive to said first data information concerning said vertical ruled lines for storing vertical line position information;

means responsive to said first data information concerning said horizontal ruled lines for storing row address information corresponding to individual fields of said array between said vertical lines position;

column address control means responsive to said stored vertical line position information and row address control means responsive to said stored row address information for providing column and row address information, respectively, to said medium to permit the arraying of one or more serial character strings in one or more selected fields between adjacent vertical line positions, each selected character string being arranged in rows, a first portion of said character string starting from a row address corresponding to the first row of said selected field and the rest of said character string continuing on successive rows between the same vertical line positions each time one row has been filled;



means connected to said row address control means and responsive to a current row address for updating said current row address by adding a predetermined number of line spacings each time an end of a field is indicated by said input coded information and for supplying said updated row address to said row address storing means;

maximum row address determining means responsive to the last row address stored in said row address storing means, said last row address corresponding to the last row address of an individual field and further responsive to said first data information concerning horizontal line position corresponding to the individual field for determining the maximum row address of said corresponding field, said maximum row address determining mean including

comparator means and register means, said comparator means responsive to said last row address of said row address storing means and the contents of said register means for updating said contents of said register means to obtain the maximum row address for storage in said register means when the last-row address of the row address storing means is larger than the contents on the register means and for supply to said row address storing means.

4,495,601
MAGNETIC BUBBLE MEMORY APPARATUS

Tadaaki Etoh; Ryuji Yano; Kazuhiro Ishida, and Shoji Yoshimoto, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,640

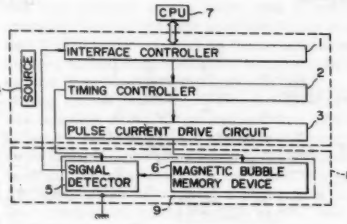
Claims priority, application Japan, Mar. 20, 1981, 56-39471

Int. Cl.[3] G11C *19/08*

U.S. Cl. 365—1 1 Claim

1. In a magnetic bubble memory apparatus of cassette type

comprising a magnetic bubble memory device including a magnetic bubble detector contained in a cassette, the improvement which comprises shield means made of electro-conductive material for surrounding said magnetic bubble memory device, said magnetic bubble detector and a signal detector,



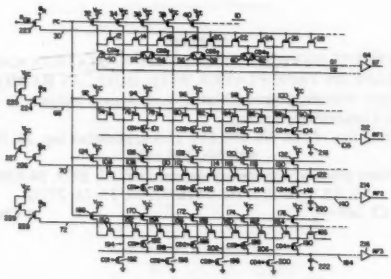
said signal detector responds to an electrical signal from said magnetic bubble memory detector to produce an output signal indicative of presence or absence of the magnetic bubble in order to shield external electrostatic noise wherein said shield means comprises a container of the cassette and said shield means is grounded.

4,495,602

MULTI-BIT READ ONLY MEMORY CIRCUIT

Douglas P. Sheppard, Grapevine, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,164
Int. Cl.³ G11C 7/00
U.S. Cl. 365—104 **5 Claims**



5. A method of operation for a read only memory comprising the steps of:

applying concurrent time changing drive signals to a selected memory transistor and to a plurality of reference transistors to drive said transistors to create transitions from a first state to a second state in a manner to generate a time spacing between said transistions of said reference transistors and said memory transistors depending on the relative threshold voltages of said reference transistors and said memory transistor wherein the selected memory transistor has one of a plurality of threshold voltages, each corresponding to a data state and each of said reference transistors has a different threshold voltage from that of the other reference transistors,

comparing the time of transition of said selected memory transistor with respect to the time of transition of said reference transistors, and

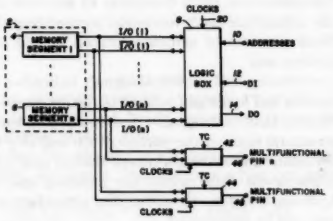
generating an output signal representing said data state of said selected memory transistor in response to said step of comparing.

4,495,603

TEST SYSTEM FOR SEGMENTED MEMORY

Ramesh C. Varshney, 2622 Ohlone Dr., San Jose, Calif. 95132

Filed Jul. 31, 1980, Ser. No. 174,112
Int. Cl.³ G11C 7/00
U.S. Cl. 365—233 **28 Claims**



1. A memory system, comprising:

a memory divided into a plurality of memory segments;

first logic means operatively coupled to each of said plurality of a memory segments, said first logic means for writing data into said memory and reading data from said memory;

a plurality of input/output lines for operatively coupling said first logic means to said plurality of memory segments; and

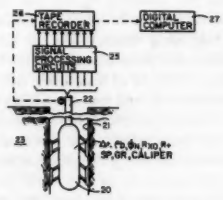
multifunctional means operatively coupled to said plurality of said input/output lines for writing data into and reading data from said memory segments during a predetermined "don't care" portion of a memory cycle, each of said plurality of input/output lines being operatively coupled to one of said plurality of memory segments.

4,495,604

MACHINE METHOD FOR DETERMINING THE PRESENCE AND LOCATION OF HYDROCARBON DEPOSITS WITHIN A SUBSURFACE EARTH FORMATION

Jean L. Dumanoir, Ridgefield, Conn., assignor to Schlumberger Technology Corp., New York, N.Y.

Continuation of Ser. No. 7,716. This application Mar. 12, 1979, Ser. No. 19,491
Int. Cl.³ B23K 9/18; G01V 3/00
U.S. Cl. 367—25 **61 Claims**



1. A machine method for exploring subsurface earth formations to determine the presence and location of hydrocarbon deposits within the earth formation surrounding a borehole formed in the earth formation by probing a plurality of depth levels of such subsurface earth formation with one or more signals produced in an investigating device adapted to be suspended in said borehole and acquiring and analyzing signals responsive to said probing signals, comprising the steps of:

(a) providing first electrical signals representative of the bulk density of the formation over a plurality of depth levels of the borehole, said first electrical signals being derived from signals responsive to the reaction of the subsurface

earth formation to gamma rays emitted into said subsurface earth formation surrounding the borehole from a source of gamma rays located in said investigating device;

(b) providing second electrical signals representative of the hydrogen content of the formation over a plurality of depth levels of the borehole, said second electrical signals being derived from signals responsive to the reaction of the subsurface earth formation to neutrons emitted into the subsurface earth formation surrounding the borehole from a source of neutrons located in said investigating device; and

(c) combining said electrical signals indicative of the bulk density and hydrogen content of the formation to produce further electrical signals representative of the volume of structural shale or the portion of silt and clay in the earth formation and making a record thereof over a plurality of depth levels from which the presence and location of hydrocarbon deposits within said subsurface earth formation can be determined.

4,495,605

METHOD FOR DETERMINING THE DIP ANGLE OF GEOLOGICAL FORMATIONS TRAVERSED BY A BOREHOLE

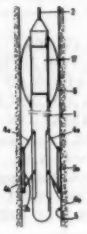
Robert Desbrandes, Sevres, and Guy Norel, La Celle Saint-Cloud, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 15, 1981, Ser. No. 283,323

Claims priority, application France, Jul. 15, 1980, 80 15587

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—33 **9 Claims**



1. A method for determining the dip angle of geological formations traversed by a borehole of known orientation and inclination, comprising transmitting an acoustic signal in a direction substantially perpendicular to the borehole axis from different vertical levels of at least three determined generatrices of the borehole wall, and receiving from the same direction at the different vertical levels of these generatrices the acoustic wave which has been reflected at least on the interface between the borehole and the geological formations, producing a signal train representative of the reflected acoustic wave, depicting each signal train by at least one group of significant elements of this signal train, correlating the group of significant elements of the signals obtained along one generatrix with the corresponding groups of significant elements obtained along the other generatrices, and determining the differences between the respective depths at which there are received on said different generatrices signal trains corresponding to one and the same geological formation, said differences being equal to the vertical distances separating the borehole levels which correspond to the maximum correlation between the signals received on said different generatrices, and said differences being representative of the dip angle of said geological formation.

4,495,606

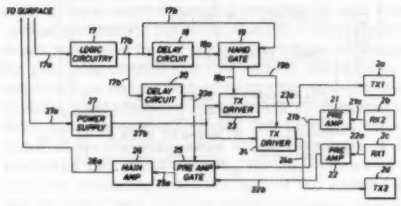
METHOD AND APPARATUS FOR COMBINED CEMENT BOND AND ACOUSTIC WELL LOGGING

John R. E. Smith, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 31, 1981, Ser. No. 297,812

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—86 **10 Claims**



1. A method of investigating subsurface areas traversed by a borehole with a logging sonde comprising the steps of:

disposing said logging sonde within said borehole;

generating transmitter and receiver logic command signals, said command signals controlling said sonde between two acoustic logging measurement modes;

delivering said transmitter and receiver logic command signals to said sonde;

generating transmitter acoustic signals and receiver signals in response to said logic command signals;

generating an amplitude control signal in response to the relative states of said logic command signals; and

adjusting the amplitude of said received acoustic signal in response to said amplitude control signal and in accordance with said acoustic logging measurement modes.

4,495,607

CIRCUIT DEVICE FOR SELECTING STATION AND TAPE IN TAPE PLAYER WITH BUILT-IN RADIO

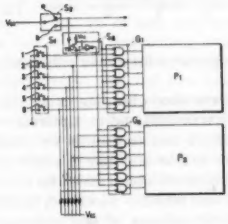
Katsumi Nishida, Higashi Matsuyama, Japan, assignor to Beltek Corporation, Japan

Continuation of Ser. No. 197,140. This application Sep. 23, 1983, Ser. No. 535,143

Claims priority, application Japan, Oct. 27, 1979, 54-139031

Int. Cl.³ H04B *1/20*; G11B *31/00, 15/18, 27/12*

U.S. Cl. 369—6 **4 Claims**



1. In a car tape player with a built-in radio, the player having a front panel with controls for operation thereof, tape selection circuit means (P_2) for selecting a piece of music on a tape having a plurality of pieces of music, interlocking means for loading and ejecting a tape to and from the player, and station selection circuit means (P_1) for selecting a station of the built-in radio, comprising:

a single group of preset switches (S_1) in the front panel of the tape player for selecting a desired station as well as a desired piece of music on the tape, said switches being

selectively connectable to said station selection circuit means or said tape selection circuit means;

station selection circuit/tape selection circuit changeover control switch means (S_2) connected to and switchable by the interlocking means, for selectively controlling changing over either one of said station selection circuit means and said tape selection circuit means, said changeover control switch means being associated with said station and tape selection circuit means and effective to cause changing over to said tape selection circuit means with a tape loaded in the interlocking means and to cause changing over to said station selection circuit means with a tape ejected from the interlocking means; and

switching circuit means (S_3, G_1, G_2) connected to said station selection circuit means and said tape selection circuit means for rendering one of said tape and station selection circuit means inoperative while keeping the other of said tape and station selection circuit means in a waiting state for operation in response to a changeover operation of said changeover control switch means, said switching circuit means also being connected to said changeover control switch means and said group of preset switches, so that each preset switch of said group of preset switches is manipulatable to render operative that one of said tape and station selection circuit means which is in said waiting state.

4,495,608

DEVICE FOR RAPIDLY MOVING AN OPTICAL PICK-UP DEVICE IN AN OPTICAL REPRODUCING APPARATUS TO A DESIRED POSITION ON A RECORD DISC

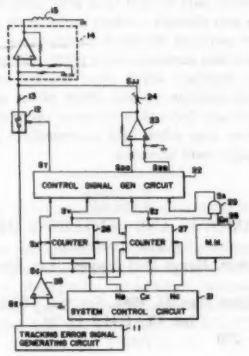
Shuichi Kimura, Saitama, and Akira Katsuyama, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,553

Claims priority, application Japan, Jan. 16, 1982, 57-5265

Int. Cl.³ G11B *7/00, 17/00, 21/10*

U.S. Cl. 369—33 **11 Claims**



1. A device for rapidly moving pick-up means of an information signal reproducing apparatus to a desired position with respect to a record disc having at least one record track with an information signal recorded therein, comprising:

drive means for moving said pick-up means in a direction transverse to said at least one record track; and

track jump means for producing a track jump signal comprised of a drive signal of a first duration followed by a brake signal of a second duration and for supplying said track jump signal to said drive means to control the latter to rapidly move said pick-up means in said transverse direction to said desired position, said track jumps means including speed detector means for detecting the speed of movement of said pick-up means relative to said disc during said second duration and timing means for determining the length of said second duration by terminating said brake signal in accordance with the detected speed of movement.

4,495,609

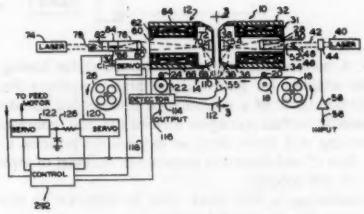
RECORDING AND PLAYBACK SYSTEM

James T. Russell, Richland, Wash., assignor to Digital Recording Corporation, Wilton, Conn.

Division of Ser. No. 935,152, is a division of Ser. No. 556,780, Mar. 10, 1975, abandoned. This application Nov. 23, 1981, Ser. No. 324,128

Int. Cl.³ G11B *7/08, 7/12;* **H04N** *5/84*

U.S. Cl. 369—44 **27 Claims**



1. Recording and reproducing apparatus comprising:

a record medium capable of receiving and recording electromagnetic information,

a first optical scanner positioned in juxtaposition with said record medium for directing a beam of electro-magnetic radiation toward said record medium via a first radiation path scanned by said scanner substantially across said record medium along a track extending substantially crossways of said record medium, and means for modulating said beam to record information on said track,

means for producing relative movement between said first scanner and said record medium so that said first scanner in scanning crossways of said record medium records said track in substantially parallel segments across said record medium,

a second concurrently operating optical scanner independent from the first optical scanner and positioned along said record medium in juxtaposition therewith and in spaced relation from said first scanner for scanning along said track crossways of said record medium via a second radiation path to read informaton recorded on said track a predetermined time after the same has been recorded, with a delay determined by the spacing between said first and second radiation paths,

means for also producing relative movement between said second scanner and said record medium,

low inertia optical deflection means for deflecting said second radiation path relative to said second scanner in a direction along the record medium substantially independently of scanning along said track to produce a rapid movement of said second radiation path as compared with said relative movement between said second scanner and said record medium,

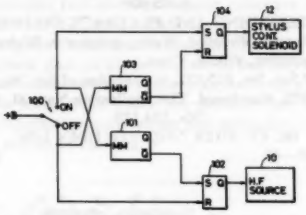
and detector means receiving the output produced via said second radiation path for energizing said deflection means to deflect said second radiation path rapidly toward the track being read in response to detection of said track.

4,495,610

CIRCUIT ARRANGEMENT FOR APPLYING HIGH FREQUENCY ENERGY TO A CAPACITANCE DETECTION RECORD STYLUS

Yoshiyo Wada, Yokohama, Japan, and Hideaki Takehara, Fujisawa, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 9, 1982, Ser. No. 416,715
Claims priority, application Japan, Sep. 12, 1981, 56-144332
Int. Cl.³ G11B 9/06, 17/00
U.S. Cl. 369—126 5 Claims



5. A method for operating a record stylus having an electrode adapted for generating a high frequency field in the dielectric layer of a capacitance disc record for detecting a geometric surface variation formed thereon, comprising:

moving said stylus from an inoperative position to the surface of said record in response to the start of reproduction of said record;

introducing a first delay time in response to the start of reproduction of said record;

applying high frequency energy to said electrode at the termination of said first delay time;

terminating said high frequency energy in response to the termination of the reproduction of said record;

introducing a second delay time in response to the termination of said reproduction; and

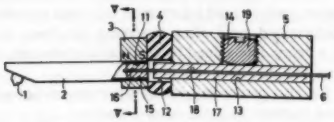
moving said stylus away from said record to said inoperative position in response to the termination of said second delay time.

4,495,611

VIBRATION SYSTEM OF PICKUP CARTRIDGE OF RECORD PLAYER

Yoshiaki Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 6, 1982, Ser. No. 405,902
Claims priority, application Japan, Aug. 14, 1981, 56-120914[U]
Int. Cl.³ G11B 3/50
U.S. Cl. 369—170 12 Claims



1. A vibration system of a pickup cartridge of a record player, comprising:

a cantilever having a stylus tip at its forward end portion;

an armature secured to a rear end portion of said cantilever;

a damper disposed rearwardly of both the rear end portion of said cantilever and said armature;

a tension wire coupled to a rear end portion of said cantilever to rearwardly pull said cantilever; and

a holder for holding a rear end portion of said tension wire; said damper being positioned between the rear end portion of said cantilever and said holder;

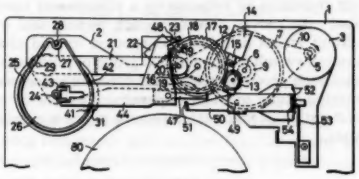
said armature, said damper and said holder being disposed so that their respective central axial lines are in alignment, and said tension wire is disposed along an axial line displaced downwardly of said aligned central axial lines.

4,495,612

TONE ARM CONTROL MECHANISM

Haruyoshi Miyako, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Apr. 23, 1982, Ser. No. 371,167
Claims priority, application Japan, Apr. 27, 1981, 56-61132[U]; Apr. 30, 1981, 56-63868[U]
Int. Cl.³ G11B 17/30, 21/02
U.S. Cl. 369—216 7 Claims



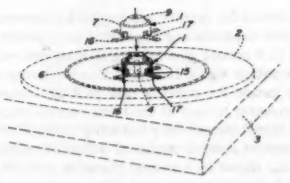
1. A tone arm control mechanism comprising; a drive means; a drive plate reciprocally rotated about an axis by said drive means; a tone arm mounted for horizontal pivotal movement about said axis a non-rotatable auxiliary drive plate mounted parallel to and adjacent said drive plate for vertical reciprocating movement, an arm rest formed on said auxiliary drive plate adapted to engage an intermediate part of said tone arm; an abutting portion formed on said drive plate adapted to engage said intermediate part of said tone arm; cam means including cam portions and slidable contact portions in slidable contact with said cam portions mounted on opposing portions of said drive plate and said auxiliary drive plate; and urging means for pressing said auxiliary drive plate toward said drive plate whereby upon rotation of said drive plate, said cam means cause said auxiliary drive plate to move up or down to raise or lower said tone arm when said intermediate portion of said tone arm engages said arm rest.

4,495,613

RECORD REMOVAL AND CENTERING DEVICE FOR 45 R.P.M. DEVICE

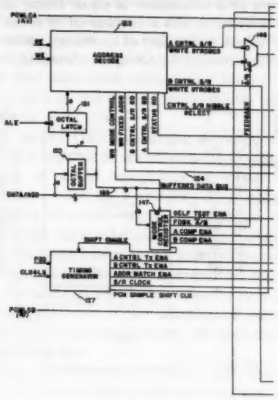
Bertrand Gagnon, Rangs 2 et 3 ouest, Les Hauteurs, Canada G0K 1C0

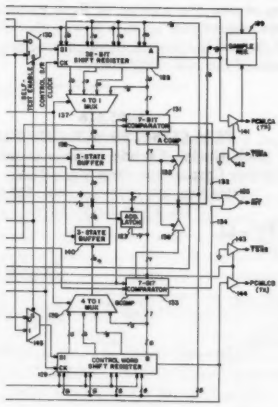
Filed May 23, 1984, Ser. No. 613,332
Int. Cl.³ G11B 17/04
U.S. Cl. 369—270 7 Claims



1. A device for removing and centering at least one 45 r.p.m. record on a standard turntable having a central spindle, comprising: a cylindrical housing having a bottom surface and an open top; said bottom surface having a central hole for precisely receiving said spindle; the external diameter of said

housing being slightly less than the diameter of the large central hole of said record; said housing further having at least two equi-spaced, rectangular vertically oriented slots formed in its side wall wherein the lower edges of said slots are flush with said bottom surface; at least two elongated arms extending through said slots; each said arm having an outer straight radially projecting portion and an inner portion terminating radially short of the center of said housing; an intermediate segment joined to both said outer and said inner portions; fulcrum means between said intermediate segment and said inner portion; the latter being vertically spaced relative to said outer portion; further comprising a circular cap slidably mounted in said housing for vertical displacement therein; biasing,displaccment limiting and guide means for said cap; the inner ends of said inner portions of said arms being arranged to raise said outer portions of said arms upwardly by lever action when said cap is pressed manually downwardly.





4,495,614

CIRCUIT FOR INTERFACING A PROCESSOR TO A LINE CIRCUIT

Enn Aro, Delaware; Leonard E. Bogan, Columbus; Richard A. Hamersley, Columbus; Paul H. Knapke, Columbus, and Robert L. Miller, Westerville, all of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 371,052

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **15 Claims**

1. An interface circuit for coupling a line circuit to a control processor and to at least one PCM bus, said interface circuit comprises:

a first set of terminals coupled to said one PCM bus;

a second set of terminals coupled to said control processor and including a control terminal, a data terminal and a clock terminal;

a third set of terminals coupled to said line circuit and including a pair of PCM terminals coupled to the PCM signal input and output of said line circuit;

first means coupled to said second set of terminals for receiving command information at said data terminal and for storing said command information in response to said control terminal having a predetermined state;

second means coupled to said data terminal and responsive to said first means for storing control information received at said data terminal;

third means responsive to said control information stored in said second means for coupling said PCM terminals to said first set of terminals.

4,495,615

METHOD AND DEVICE FOR CONTROLLING A SWITCHING NETWORK

Robert Wilcke, Leiden, Netherlands, assignor to Statt der Nederlanden (Stattsbedrijf der Posterijen, Telegrafie en Telefonie), The Hague, Netherlands

Filed Sep. 9, 1982, Ser. No. 416,347

Claims priority, application Netherlands, Sep. 22, 1981, 8104358

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **8 Claims**

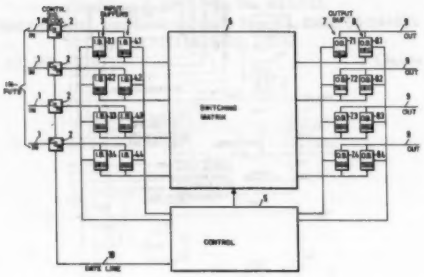
1. Method for controlling a switching network, which network comprises:

A. an input buffer, consisting of a number of input buffer segments for storing incoming signals to be switched through;

B. an output buffer, consisting of an equal number of output buffer segments for registering signals switched through;

C. a switching matrix having rows and columns of cross-points via which switching paths are formed between the input buffer and the output buffer; and

D. a control device for periodically establishing switching paths, each of these switching paths being set up once in every one of a succession of equal frame periods each of which is divided into a number of internal time slots, in each of which a plurality of switching paths can be simultaneously provided by set-up as aforesaid,



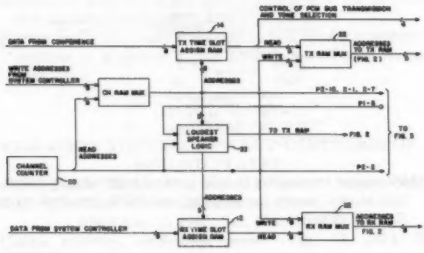
characterized in that the control device (5) performs a step of setting the switching matrix (6) during each internal time slot according to one of a number of fixed patterns of buffer segment interconnections, in such a way that in every internal time slot each of the rows is through-connected with a different column of the switching matrix.

4,495,616

PCM CONFERENCE CIRCUIT

Bruce D. Shuh, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,970
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62 **2 Claims**



1. A conference circuit for controlling multiple port conferences within a time division communication system arranged to transmit signals over a highway comprised of plurality of time spaced channels within a series of sequential time frames; said conference circuit including for each conference call in progress: storage means for storing therein multi-bit words with each multi-bit word representing a sample of voice data from one of the parties involved in a conference call, a latch circuit coupled to the output of said storage means to store for each conference at least one word from said storage means representing the sample read from said storage means during the prior frame having the highest amplitude, a comparator coupled to the input of said storage means and said latch circuit for comparing a plurality of bits of said word stored in said latch circuit against a currently read word from each other party to a conference, means coupled to said comparator and said storage means for replacing said word in said latch circuit with said currently read word when said comparison indicates that said currently read word has a higher amplitude than said word against which it was compared, a further means coupled to said latch circuit and the input of said storage means for storing said word indicating the highest amplitude from each conference call, means coupled to said further storage means for timing the duration of storage in said further storing means and for changing said stored word in said latch circuit to indicate a lower amplitude level when said duration of storage exceeds a predetermined plurality of time frames.

4,495,617

SIGNAL GENERATION AND SYNCHRONIZING CIRCUIT FOR A DECENTRALIZED RING NETWORK

Joseph W. Ampulski, Mount Prospect; James N. Furukawa, Chicago, both of Ill.; Donald R. Kesner, and Ronald D. Bernal, both of Phoenix, Ariz., assignors to A.B. Dick Company, Chicago, Ill.

Filed Sep. 9, 1982, Ser. No. 416,312
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—86 **11 Claims**

1. A method of communicating data among a plurality of stations connected in a ring network while minimizing phase jitter and phase delay comprising the steps of:

(a) providing each station in the ring with a receive clock for sampling incoming signals including data and a transmit clock for permitting transmission of signals including data to the next station in the ring;

(b) coupling the receive and transmit clocks when a station is not transmitting to maintain approximately the same frequency for the transmit clock as the receive clock;

(c) decoupling a station's transmit clock from its receive clock during transmission of data whereby the transmission occurs at the fundamental frequency of the transmit clock;

(d) causing a station which has finished transmitting data to generate and transmit a phase delay identifier to the next station in the ring;

(e) causing stations which are not transmitting to detect and retransmit said phase delay identifier to the next station in the ring; and

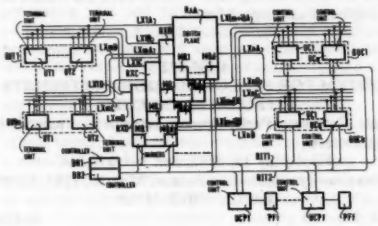
(f) causing each station, upon detecting said identifier when not intending to transmit or upon regeneration of the identifier when transmitting, to jam sync its transmit clock and receive clock to the next detected transition in the incoming signals,

thereby re-establishing the coupling of step (b) in the station which has finished transmitting and whereby residual phase delay is passed with the identifier from station to station until it is blocked by step (c) when a subsequent station initiates a new transmission.

4,495,618
DIGITAL SWITCHING NETWORK

Bernard Dupuis, Montigny le Bretonneux; Jean-Pierre Pasquet, Villejuif, and Christian Coppens, Velizy, all of France, assignors to Campagnie Industrielle des Communications Cit-Alcatel, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,693
Claims priority, application France, Apr. 3, 1981, 81 06809; Apr. 3, 1981, 81 06810
Int. Cl.³ H04J 3/00
U.S. Cl. 370—66 5 Claims



1. A digital switching network in an exchange having distributed control and a central switching network, for interconnecting selected terminal units from groups of terminal units each including a plurality of terminal units and each terminal unit including means for connecting to selected ones of a plurality of multiplex links, said central switching network comprising a single switching stage having a plurality of independent planes, each plane connecting to a plurality of said multiplex links wherein each multiplex link comprises inlet and outlet links for communicating in opposite directions between said terminal units and central switching network, each multiplex link being connected in common to all terminal units in a group of terminal units and to one of said planes, and each group of terminal units being coupled to all planes via respective multiplex links, each of said planes comprising a plurality of synchronized switches each equipped with a market, all switches in any given plane being connected in parallel to all inlet links coupled to said given plane and each switch being coupled to a respective group of the outlet links coupled to said given plane, each switch being modular and including a control memory circuit driven by the associated market and further including a plurality of square switching matrices, each of said square switching matrices in a given switch being coupled to a respective portion of the inlet links coupled to said given switch and to all outlet links coupled to said given switch, connection data stored in the control memory circuit of a given switch determining connections between inlet links and respective outlet links served by each switching matrix in said given switch, and said associated market of said given switch controlling said connection data stored in the control memory of said given switch.

4,495,619
TRANSMITTER AND RECEIVERS USING RESOURCE SHARING AND CODING FOR INCREASED CAPACITY

Anthony Acampora, Freehold, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

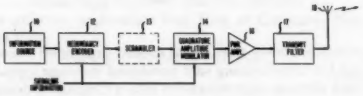
Continuation of Ser. No. 314,352, Oct., 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,521
Int. Cl.³ H04B 1/10
U.S. Cl. 370—104 7 Claims

1. A transmitter capable of transmitting each of one or more digital message burst input signals in at least one separate assigned time slot of a time division multiple access (TDMA) frame sequence which is destined for a separate one of a plurality of remote, spaced apart, receivers of a TDMA communication system, the transmitter comprising:

encoding means (12) capable of receiving each of the one or more digital message burst input signals to be transmitted, the encoding means comprising a plurality of redundancy encoders (33) which generate different redundancy codes and a control means (32) connected to the plurality of redundancy encoders for selecting one of said redundancy encoders and associated redundancy code to be used in encoding each of the one or more digital message burst input signals; and

modulating means (14) comprising a signal constellation encoder (42) capable of selectively generating any one of a plurality of signal constellations, where each signal constellation comprises a plurality of points and is not a scalar replica of another signal constellation, and converting each of the encoded digital message burst input signals from the encoding means into a selected one of the plurality of signal constellations, and control means (44) for causing the signal constellation encoder to selectively use a predetermined one of the plurality of signal constellations for each of the redundancy encoded digital message burst input signals;

the encoding means control means and the modulating means control means being capable of selecting a first pair



combination of a predetermined redundancy code and a predetermined signal constellation for encoding a digital message burst input signal for transmission in a single time slot of the frame sequence when the transmission between the transmitter and remote receiver destined to receive said transmitted message burst input signal is equal to or above a predetermined carrier-to-noise ratio (CNR), and selecting a second pair combination of a predetermined redundancy code and a predetermined signal constellation for encoding a digital message burst input signal for transmission in more than one time slot of the frame sequence when the transmission between the transmitter and a remote receiver destined to receive said transmitted message burst signal is below said predetermined CNR, the first pair combination being a fixed pair of a predetermined redundancy code and a predetermined signal constellation and the second pair combination comprising a selectively different pair of a predetermined redundancy code and a predetermined signal constellation than used for said first pair combination for achieving a high transmission capacity while maintaining low fade condition outage for each of the one or more message burst signal transmissions.

4,495,620
TRANSMITTING DATA ON THE PHASE OF SPEECH

Raymond Steele, Hazlet; Wai C. Wong, Aberdeen, both of N.J., and Costas S. Xydeas, Loughborough, England, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 5, 1982, Ser. No. 405,507
Int. Cl.³ H04J 15/00; H04L 5/00
U.S. Cl. 370—118 11 Claims

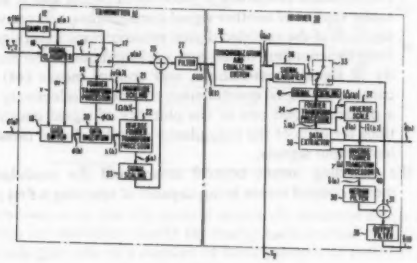
1. In a simultaneous transmission system for data and analog speech:

a transmitter responsive to both an analog speech signal (s(t)) and a data stream (d(n)) for simultaneously transmitting the analog speech signal and the data stream as a combined message signal (G(t)) wherein the transmitter comprises

combination means responsive to both said analog speech signal and said data stream for transforming said analog

speech signal from a time domain representation into a frequency domain representation, inserting a predetermined portion of said data stream in an appropriate form in place of a selected portion of the frequency domain representation, and transforming said frequency domain representation into a time domain representation of the combined message signal output of the transmitter; and

a receiver responsive to the combined message signal produced by said transmitter and recovering therefrom both said analog speech signal and said data stream wherein the receiver comprises



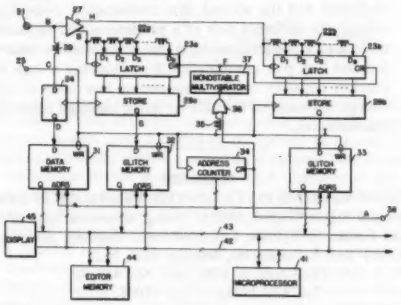
separation means responsive to said combined message signal for transforming said combined message signal from a time domain representation into a frequency domain representation, removing and producing as a data output the predetermined portion of said data stream therefrom, inserting a plurality of random components in place of the removed portion of said frequency domain representation, and transforming said frequency domain into a time domain representation of a recovered analog speech signal.

4,495,621

GLITCH DETECTING AND MEASURING APPARATUS

Koji Nakagomi, Gyoda; Tetsuo Aoki, Konosu, and Takayuki Nakajima, Gyoda, all of Japan, assignors to Takeda Riker Co. Ltd., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,791
Claims priority, application Japan, Dec. 21, 1981, 56-206377
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—6 **18 Claims**



1. A device for detecting glitches and measuring their widths, wherein each correct data on a signal line is longer than the period of a clock signal of said device and the glitches on said signal line that are to be measured have a width that is shorter than said clock period, said glitches being limited effectively to positive glitches when the signal is at low level and negative glitches when the signal is at high level, said device comprising

delay means for effectively taking N samples of the signal on said signal line spaced at an interval that is a minor part of said clock period, the width of said interval depending on the desired resolution in the measurement of the width of the glitches, and for repeating said taking of N samples of the signal on said signal line with each clock period, each said taking of N samples providing a respective N-bit word of data,

store means coupled to said delay means for storing each said word of data, and

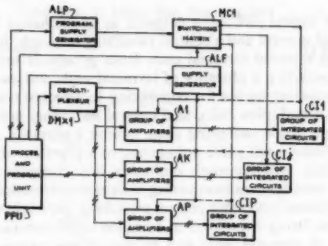
computer means coupled to said store means for examining said stored words of data, for recognizing glitches therein and for determining their widths, from the values of said samples of said signal line.

4,495,622

SYSTEM FOR SELECTING HIGH-RELIABILITY INTEGRATED CIRCUITS

Stéphane Charruau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 13, 1982, Ser. No. 377,844
Claims priority, application France, May 15, 1981, 81 09757
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—20 **11 Claims**



1. A system for selecting high-reliabilit.y integrated circuits by thermal and dynamic treatment, comprising:

means for receiving the integrated circuits to be selected wherein said integrated circuits are constructed of P different types with respect to the number of terminal pins and wherein said integrated circuits are accordingly arranged in P separate groups on said means for receiving;

heat treatment means comprising a heat chamber in which said receiving means are disposed to provide a thermal treatment to said integrated circuits;

dynamic treatment means for generating dynamic signals to be applied to said integrated circuits, said dynamic signals consisting of P distributions of dynamic signals for exciting separately said P groups by signals conventional to the types of integrated circuits of each of said groups respectively, said P distributions being provided successively such that only one group of integrated circuits is excited at each instant considered, said P distributions being repeated periodically so that each of said groups receives sequentially its distribution of dynamic signals at the rate of said periodic repetition, said dynamic treatment means comprising a power amplifier assembly having first inputs for receiving digital control signals, second inputs for receiving enabling signals and outputs connected to said P groups of integrated circuits respectively for transmitting said P distributions and said dynamic treatment further comprising a programmable processing unit PPU for generating said control signals and a demultiplexing circuit for generating said enabling signals wherein said programmable processing unit has first outputs connected to said first inputs of said amplifier assembly and second outputs connected to said demultiplexing circuit to address said demultiplexing circuit by address signals, said control and address signals being determined to provide

said P successive distributions at said outputs during the length of each of said periods;

direct current supplying means for producing a plurality of different d.c. supply of voltages for each of said P different types of integrated circuits, said voltages being transmitted periodically to each of said integrated circuits at the same rate as said dynamic signals in order to supply the type of integrated circuits excited at the instant considered with the voltage specified for said type and during a interval slightly longer and overlapping the time of application of the dynamic signal supplied to said type, and further wherein said supply means comprises a programmable supply which is addressed from the programming processing unit and having an output connected to a switching matrix also addressed from said programming processing unit and said supply further having outputs connected respectively to each of said integrated circuits of said different groups so as to distribute the corresponding voltages to each of said groups successively;

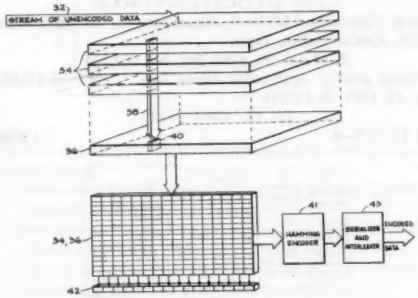
and further wherein said integrated circuits have at least one of said terminal pins for receiving said supply voltage and a plurality of other terminal pins for receiving said dynamic signals with the maximum number N of said other of said pins determining the minimum number of said first inputs of said power amplifier assembly according to the different types of integrated circuits wherein said assembly comprises at least one set of N power amplifiers.

4,495,623

DIGITAL DATA STORAGE IN VIDEO FORMAT

David J. George, Irvine; Hue V. Nguyen, Westminster, and Raymond Yardy, Irvine, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Sep. 2, 1982, Ser. No. 414,094
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **25 Claims**



1. Apparatus for correcting errors in digital data stored on a storage medium and recovered therefrom, said apparatus comprising:

means for arranging the bytes of data to be stored on the storage medium into a plurality of code blocks each having a first predetermined number of columns and a second predetermined number of rows of bytes;

first order means for generating a parity block of first order parity bytes, said parity block having a number of columns and a number of rows of bytes corresponding to said first predetermined number and said second predetermined number, respectively, such that the first order parity bits in said parity block correspond to the computed parity of the combined corresponding bits in each of said code blocks;

second order means for generating a parity row of second order parity bytes for each of said data blocks and said parity block, such that each bit of each said second order parity byte corresponds to the computed parity of the combined corresponding bits in each byte in the column of the block associated with that parity row, said second order means adding each said row to its associated block; and

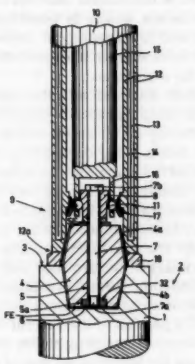
means for generating a correction control word for each byte of all of said blocks, and for adding each said correction control word to each said byte for which said correction control word is generated, to form a composite word.

4,495,624

GRAPHITE ELECTRODE NIPPLE

Uwe Reimpell, Burgallee 136; Anton Wamser, Karl-Bierschenkstrasse 8, both of D-6466 Hanau am Main; Otto Stenzel, Am Mühlrain 18a, D-6466 Gründau-4, and Wilhelm Burgmann, Latrasse, F-71670 Issy-L'Evéque, all of Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,978
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043318
Int. Cl.³ H05B *7/14, 7/08*
U.S. Cl. 373—93 **8 Claims**



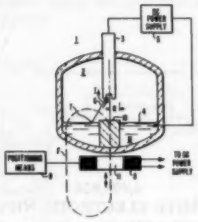
1. In a graphite nipple (**4**) for use in a composite electrode system, the nipple having means (**4*b***) associated with a first end (FE) for uniting the nipple (**4**) with a first graphite electrode portion (**1**) and a second, opposite end (SE) for projecting from the first graphite electrode portion (**1**) when the nipple (**4**) is united therewith, a surface of the nipple (**4**) projecting to the second end (SE) thereof having a screw thread (**4*a***) for connecting the nipple with a second graphite electrode portion, whereby to extend with the second graphite electrode portion the electrode formed by the nipple and first electrode portion for continued use in an electric furnace, the electric furnace having electrode holder means (**10**) for holding the electrode from the nipple at least a portion (**7**) of the electrode holder means (**10**) not being made of graphite, the electrode holder (**10**) cooperating with the nipple (**4**) for supporting the graphite electrode portion (**1**) in the electric furnace, the improvement comprising:

a supporting face (**32**) on the nipple (**4**), other than the screw thread (**4*a***), for shape-locking engagement with the non-graphite portion (**7**) of the electrode holder means (**10**) when the nipple (**4**) is supporting the graphite electrode portion (**1**) in the electric furnace.

4,495,625
MAGNETIC FIELD STABILIZED TRANSFERRED ARC FURNACE

Joachim V. R. Heberlein, Forest Hills, and Maurice G. Fey, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,785
Int. Cl.³ H05B *7/144, 7/20*
U.S. Cl. 373—107 **31 Claims**



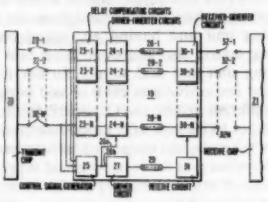
1. An electric arc furnace, comprising:
chamber means for containing melt therein;
an arcing electrode disposed with the chamber means and in communication with the interior portion thereof;
an arc attachment surface in the interior portion of the chamber means, the arc attachment surface and the arcing electrode positioned such that an electric arc can be started and is maintained therebetween;
DC power means which in combination with the arcing electrode and arc attachment surface creates an electric potential therebetween and provides current for flowing through the electric arc;
field coil means disposed with the chamber means, the field coil means being electrically connected to the DC power means inducing a DC magnetic flux field thereabout, the field coil means being disposed in relation to the arc attachment surface such that the magnetic flux field is substantially transverse to the arc root on the arc attachment surface causing a force to be applied to the arc root resulting in the continual rotation of the arc root about a closed path on the arc attachment surface thereby allowing increased contact of the arc root with the melt; and
electrical insulating means proximate the arc attachment surface about a region wherein the magnetic flux field is substantially parallel to the current flowing in the electric arc, the electrical insulating means angularly displacing of the arc from the longitudinal axis of the arc electrode and preventing the formation of the electric arc between the arcing electrode and the arc attachment surface thereby avoiding arc fixation.

4,495,626
METHOD AND NETWORK FOR IMPROVING TRANSMISSION OF DATA SIGNALS BETWEEN INTEGRATED CIRCUIT CHIPS

Armand Brunin, Le Mee, and Guy D'Hervilly, Ris-Orangis, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,813
Claims priority, application 06251981, Jun. 25, 1981, 81430018.2
Int. Cl.³ H04L *25/34*
U.S. Cl. 375—19 **13 Claims**

1. A method for transmitting digital data signals from a first integrated circuit to a second integrated circuit, the first integrated circuit having multiple output devices which produce the data signals by assuming either a conductive or non-conductive state, the second integrated circuits having inputs for receiving the data signals, the method comprising:
analyzing the data signals of the first circuit to determine the number of first circuit output devices in a conductive state;
generating a control signal to invert the data signals produced by the first circuit when the number of output devices in a conductive state is equal to or greater than a pre-determined number and to not invert the data signals when the number of output devices in a conductive state is less than the predetermined number;

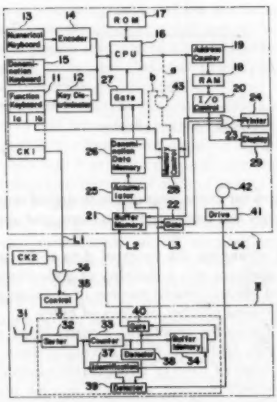


transmitting the data signals to the second circuit either inverted or non-inverted in accordance with the control signal;
transmitting the control signal to the second circuit; and
establishing the data signals as they originally appeared at the first circuit output devices in response to the control signal before the data signals are introduced to the second circuit inputs.

4,495,627
CASH ACCOUNTING SYSTEM

Katsuji Nishimura, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1982, Ser. No. 403,324
Claims priority, application Japan, Aug. 7, 1981, 56-124445; Aug. 10, 1981, 56-125514
Int. Cl.³ G06F *15/30*
U.S. Cl. 377—6 **2 Claims**



1. A cash accounting system which comprises, in combination:
a cash register for recording various transactions of money;
a counting machine electrically connected with said cash register and operable to count the money including papers and coins used during each of the transactions;

printing means; and

totaling means for totaling according to denomination count data developed by said counting machine;

said printing means and said totaling means being provided in either one of said cash register and said counting machine;

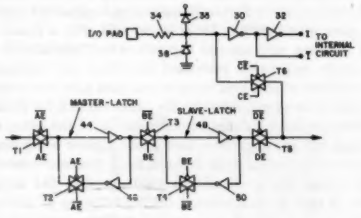
whereby money information developed by said counting machine as a result of a counting operation is printed out by said printing means in response to completion of the counting operation while respective totals of the money of different denominations developed by said totaling means through a plurality of counting operations of said counting machine in a transaction are printed out by said printing means in accordance with an instruction indicative of completion of the transaction.

4,495,628

CMOS LSI AND VLSI CHIPS HAVING INTERNAL DELAY TESTING CAPABILITY

John J. Zasio, Sunnyvale, Calif., assignor to Storage Technology Partners, Louisville, Colo.

Filed Jun. 17, 1982, Ser. No. 389,573
Int. Cl.³ G11C *19/28*
U.S. Cl. 377—70 **9 Claims**



1. An integrated circuit having integral delay testing capability comprising:

an integrated circuit circuit chip having internal functional circuitry thereon;

a shift register circuit formed on said chip, said shift register circuit comprising a plurality of shift register stages connected in series, each stage being adapted to selectively allow data signals to pass directly therethrough;

a control circuit formed on said chip for controlling the operation of said shift register circuit;

means for selectively configuring said shift register circuit as a ring oscillator in response to control signals generated by said control circuit; said ring oscillator having a period of oscillation that is approximately two times the time it takes a data signal to propogate through said shift register circuit;

a plurality of input/output pads located near the periphery of said chip for providing input and output connections to said internal functional circuitry and said control circuit, one of said pads being an input pad through which a data signal may be directed towards said shift register circuit, and another of said pads being an output pad through which a data signal may be received from said shift register circuit;

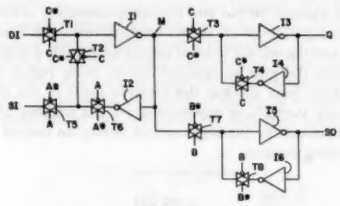
whereby a time measurement may be made of the time it takes a data signal to propagate through said shift register circuit; which time measurement can be related to the delay times associated with the operation of said internal functional circuit.

4,495,629

CMOS SCANNABLE LATCH

John J. Zasio, Sunnyvale, and Larry Cooke, Cupertino, both of Calif., assignors to Storage Technology Partners, Louisville, Colo.

Filed Jan. 25, 1983, Ser. No. 460,952
Int. Cl.³ G11C *11/28*
U.S. Cl. 377—70 **12 Claims**



1. A scannable latch circuit for selectively handling data bit signals under control of at least one clock signal, said scannable latch circuit comprising:

latch means, operable in a first mode of operation, for providing and maintaining a data output bit signal for an entire clock cycle of a first clock signal, said data output bit signal being equivalent to a data input signal immediately preceding said clock cycle, said latch means comprising a first circuit connected in tandem to a second latch circuit, said first and second latch circuits operating respectively as master and slave latch circuits during said first mode of operation;

shift means, operable in a second mode of operation, for selectively allowing data bit signals to be shifted into and out of said latch means, said shift means including output means for shifting data out of said latch means that is isolated from the data output bit signal provided by said latch means in said first mode of operation, said shift means comprising a third latch circuit coupled to said second latch circuit, said second and third latch circuits operating respectively as master and slave latch circuits during said second mode of operation; and

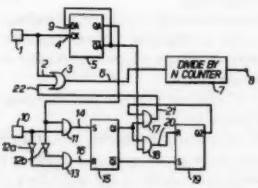
select means for selecting the mode of operation of said scannable latch circuit, said select means being operable during all useful portions of said clock cycle.

4,495,630

ADJUSTABLE RATIO DIVIDER

Norman C. Thompson, and Steven J. Poole, both of Wiltshire, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Dec. 7, 1981, Ser. No. 328,248
Claims priority, application United Kingdom, Dec. 8, 1980. 8039315
Int. Cl.³ H03K *21/02, 21/06, 21/36*
U.S. Cl. 377—110 **6 Claims**



1. An adjustable ratio divider comprising a dividing counter having a fixed division ratio and which is clocked by an input pulse train fed to the counter via a gate associated with a logic

circuit, which logic circuit comprises dividing means arranged to frequency divide the input pulse train to provide a divided pulse train and a complementary divided pulse train, synchronising means arranged to generate a first control output and a complementary first control output, each of which is synchronised with the divided pulse train, in dependence on a control signal fed to the synchronising means and the divided pulse train, means for generating a second control output in response to the complementary first control output in dependence on the first control output and the complementary divided pulse train, and gate control means responsive to the first control output and the second control output to provide a gating signal to control the gate to remove one or more pulses from the input pulse train so that the division ratio of the divider is effectively variable in dependence on the number of control pulses received by the logic circuit during an output cycle of the dividing counter.

4,495,631

GAS LASER IN WHICH THE GAS IS EXCITED BY CAPACITOR DISCHARGE

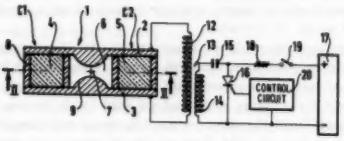
Bernard Lacour, Marcoussis; Marc Maillet, Massy; Olivier de Witte, Gif-sur-Yvette, and Chantal Vannier, Saint-Michel sur Orge, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Feb. 16, 1982, Ser. No. 349,105

Claims priority, application France, Feb. 16, 1981, 81 02974; Aug. 31, 1981, 81 16542

Int. Cl.³ H01S *3/097*

U.S. Cl. 372—38 **8 Claims**



1. A gas laser in which the gas is excited by discharges from capacitors, said laser comprising:

two spaced opposed metal plates;

two spaced dielectric members with high dielectric constant disposed between said plates, and defining a hollow volume along an axis;

two spaced opposed mirrors closing off said hollow volume along said axis and forming with said metal plates and said dielectric members an optical resonant cavity, said cavity containing an active laser gas;

one of said mirrors being partially transparent to laser radiation and forming a laser beam output;

said dielectric members and said metal plates constituting two laser capacitors connected in parallel, the middle portions of said metal plates in contact with the active gas constituting laser-triggering electrodes; and

a capacitor charging circuit for said laser capacitors, said circuit comprising:

a transformer having a primary winding connected in series with a charging circuit capacitor and having secondary windings ends connected to respective ones of said two plates;

a source of electric current for charging the charging circuit capacitor; and

means for controlling the discharge of the charging circuit capacitor through the primary winding so as to generate an induced current in the secondary winding which induced current is capable of charging the laser capacitors so as to set up an electric discharge between the laser-triggering electrodes with said discharge exciting the active laser gas to form a laser beam.

4,495,632

RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

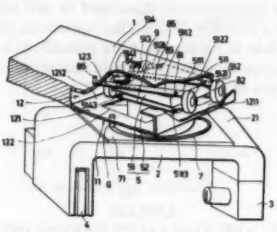
Kozo Nakano, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 277,721, Jun. 26, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 575,317

Claims priority, application Japan, Jun. 27, 1980, 55-88058

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—40 **3 Claims**



1. An X-ray photographic apparatus for taking a radiograph of the entire jaws comprising a first support, a second support mounted on said first support so as to permit arcuate movement of the second support without rotating about an axis which passes through the second support, an arm mounted rotatably on said second support and having an X-ray generator on its one end and a film holding means in opposed relation with the generator a means for rotating said arm, a means for arcuately moving said second support when said arm is rotated, a single projection provided on either one surface of opposed surfaces of said first support and said arm, and a single curved guide groove provided on the other surface for slidably guiding said projection fitted into the inside of the other surface through said guide groove, said guide groove being generally semi-circular and of such a shape such that movement of the single projection in the single guide groove and arcuate movement of said second support during rotation of said arm control the rotation of said arm, rotates the film surface in said film holding means along the dental arch at an approximately constant distance from the arch and at an approximately equal speed and causes the X-ray beams from said X-ray generator to irradiate onto the film surface at right angles to the plane of the dental arch at any point of the arch.

4,495,633

PROCESS AND APPARATUS FOR THE DIMENSIONAL AND NON-DESTRUCTIVE CONTROL OF A HOLLOW MEMBER

Pierre De Conto, Chevigny Saint Sauveur, and Raymond Guipont, Venarey-les-Laumes, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 17, 1982, Ser. No. 419,476

Claims priority, application France, Sep. 23, 1981, 81 17927

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—55 **9 Claims**

1. Apparatus for non-destructively and absolutely measuring the thickness of the wall of a hollow member, comprising:

means for holding and positioning said member;

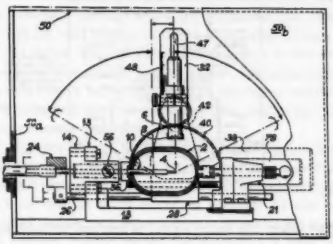
a radioactive source movable into said member for emitting gamma radiation in the direction of the inner surface of said wall of said member;

a single detector positionable outside said member so as to detect the gamma radiation passing through said wall of said member;

said source and said detector forming an assembly;

moving means for causing relative and continual movement between said assembly and said member, so that said assembly follows the wall profile of said member, wherein when said member has a rectilinear wall, in section, said

moving means simultaneously moves the source and the detector parallel to the rectilinear wall and wherein, when said member has a circular arc-like wall, in section, said source is maintained in the center of the arc, and the



detector moves along a larger radius arc centered on the source; and

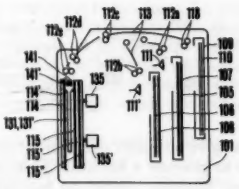
means for fixing the distance between the detector and the source, said distance remaining constant while the assembly moves.

4,495,634

X-RAY APPARATUS

Kenichi Suzuki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 370,848
Claims priority, application Japan, Apr. 28, 1981, 56-64837
Int. Cl.³ G01N *23/02*; G03B *41/16*
U.S. Cl. 378—173 **3 Claims**



1. An X-ray apparatus comprising:

converting means for exposing a sheet film disposed perpendicular to the horizontal direction;

film loading means for loading sheet films of different length;

transporting means for transporting a sheet film from the film loading means to the converting means along a descending direction; and

holding means for keeping the upper edge of the sheet film substantially at the same height in the converting means regardless of the length of the sheet film.

4,495,635

METHOD AND APPARATUS FOR PROFILING STRUCTURAL SECTIONS

John M. Dobbs, S. Hamilton, Mass., assignor to Analogic Corporation, Wakefield, Mass.

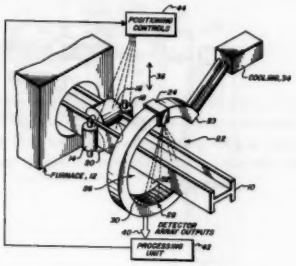
Continuation of Ser. No. 250,765, Apr. 3, 1981,. This application Sep. 19, 1983, Ser. No. 533,626
Int. Cl.³ G01B *15/02, 15/04*
U.S. Cl. 378—56 **6 Claims**

1. Apparatus for profiling a structural section having a spatial extent defining first and second outside edges, comprising:

a source for providing a fan-beam of penetrating radiation a portion of which passes through substantially the entire spatial extent of the structural section, and other portions of which pass through first and second regions respectively outwardly spaced from the first and second outside edges of the structural section;

an array of detectors spaced from the source having a first plurality of detectors responsive to the portion of the fan-beam of radiation which passes substantially through the entire spatial extent of the structural section to provide first data respectively representative of the thickness of corresponding ones of a plurality of predetermined physically adjacent regions of the structural section through which the fan-beam passes from the source to corresponding ones of the detectors of said first plurality of detectors, said regions together encompassing substantially the entire spatial extent of the structural section;

said array of detectors having a second and a third plurality of detectors disposed on respective ends of said first plurality of detectors of said array of detectors responsive to the portions of the fan-beam of radiation which pass



through the first and second regions respectively outwardly spaced from the first and second outside edges to provide second data respectively representative of the location of said first and second outside edges; and

means connected to the array of detectors including a processor and an associated memory having stored data representative of an ideal two-dimensional cross-section of the structural section, said means being operative in response to said first thickness data respectively representative of corresponding ones of said predetermined physically adjacent regions which together encompass the entire spatial extent of said structural section, and to said second outside edge location data respectively representative of the location of said first and second outside edges, to provide third data representative of the deviations of the two-dimensional cross-section of the structural section relative to the ideal two-dimensional cross-section.

4,495,636

MULTICHANNEL RADIOGRAPHY EMPLOYING SCATTERED RADIATION

Alan M. Jacobs, Gainesville, Fla.; Edward S. Kenney, State College, and Joseph J. McInerney, Hummelstown, both of Pa., assignors to Research Corporation

Filed Jan. 2, 1981, Ser. No. 222,133
Int. Cl.³ G01N *23/20*
U.S. Cl. 378—87 **20 Claims**

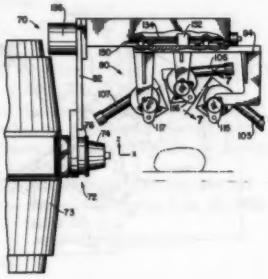
16. A process of collecting data which encodes the positions of a plurality of regions on an interfacial surface in the body of a subject for constructing an image of the interface, the interfacial surface dividing a first region from a second region in the body, contents of the first region differing from contents of the second region in the extent to which unit volumes of such contents scatter penetrating a radiation, the process comprising the steps of:

(a) directing a shaped beam of penetrating radiation into the body of the subject and through the interfacial surface;

(b) orienting each of a plurality of directional radiation detectors in a presearch orientation associated with the detector, each directional radiation detector being pivota-

bly supported outside of the body of the subject, each directional radiation detector having a directional radiation receptance port and a radiation-intensity signal output and being adapted to produce a radiation-intensity signal at the output which is a measure of the intensity of radiation receptance port and propagating in a direction admitted by the receptance port, each directional radiation receptance port having a limited field of view, an intersection of a field-of-view of a directional radiation receptance port of a radiation detector with the beam of radiation defining a sensitive volume;

(c) automatically pivoting each directional radiation detector to cause the sensitive volume associated with the radiation detector to intersect the interfacial surface;



(d) monitoring the radiation intensity signal from each radiation detector as the detector is automatically pivoted and automatically stopping the radiation detector at an orientation at which the radiation-intensity signal or an average value thereof at least approximately equals an operating point value associated with the detector corresponding to locating the sensitive volume associated with the radiation detector at a position straddling the interfacial surface; and

(e) transmitting detector-orientation data which encodes the orientation of each directional radiation detector to a data processing device thereby collecting data which encodes the positions of the sensitive volumes associated with the directional radiation detectors straddling the interfacial surface.

4,495,637

APPARATUS AND METHOD FOR ENHANCED PSYCHOACOUSTIC IMAGERY USING ASYMMETRIC CROSS-CHANNEL FEED

Paul F. Bruney, Silver Spring, Md., assignor to Sci-Coustics, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 401,211, Jul. 23, 1982,. This application May 3, 1983, Ser. No. 491,297

Int. Cl.³ H04R *5/00;* **H04S** *1/00*

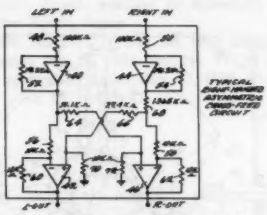
U.S. Cl. 381—1 **24 Claims**

1. An audio signal processing circuit for processing plural channels of related audio signals, said circuit comprising:

a first audio signal processing channel;

a second audio signal processing channel; and

asymmetric cross-feed means for feeding signal levels from the first to second channel and from the second to first channel that are substantially different in relative magnitude thus producing asymmetric bi-directional audio signal cross-feed between said first and second channels and an asymmeric output from said channels when different signals are applied to said first and second channels while causing said first and second channels to produce the same



output when the same signal is applied to both said channels.

4,495,638

AUDIO-BAND ELECTRO-MECHANICAL VIBRATION CONVERTER

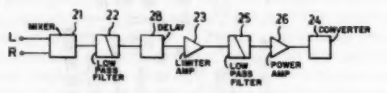
Kyota Yamada, and Akira Komatsu, both of Tokyo, Japan, assignors to Body Sonic Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 025,501, Mar. 30, 1979, Pat. No. 4,354,067. This application Feb. 23, 1981, Ser. No. 351,555

Claims priority, application Japan, May 17, 1978, 53-58518; May 31, 1978, 53-65486; May 31, 1978, 53-65487; May 31, 1978, 53-65488; Jun. 22, 1978, 53-75580; Jul. 27, 1978, 53-103285[U]; Jul. 27, 1978, 53-103286[U]; Aug. 7, 1978, 53-96014; Oct. 5, 1978, 53-137134[U]; Nov. 20, 1978, 53-159887[U]; Dec. 26, 1978, 53-181743[U]

Int. Cl.³ H04R *5/00*

U.S. Cl. 381—27 **3 Claims**



1. Device to give an audio signal to a coil of a vibration converter and to generate a mechanical vibration in a casing thereof through magnetic interaction between the magnetic force developed in said coil and the magnetic force of a magnetic gap, said device comprising:

a mixer to blend the outputs from a stereo unit;

a first stage low-pass filter connected to said mixer to let pass a low-band audio signal for the converter;

a limiter means to limit the output of said low-pass filter when the output exceeds a specified level;

a second stage low-pass filter to correct a distortion of the wave form of a signal from said limiter means;

an amplifier connected to said low-pass filter, a delay circuit being added between the mixer and the low-pass filter.

4,495,639

ELECTRONIC DATA COMPRESSOR

John E. Mosier; Jim B. Surjaatmadja, and George B. McLawhon, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 8, 1982, Ser. No. 355,318

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—51 **5 Claims**

1. An apparatus for compressing data contained in a serial stream of binary bits provided by a binary bit stream generating means, the binary bit stream generating means also providing a master timing signal and a byte formed signal, the byte formed signal designating when a predetermined number of bits forming a byte has been placed in the binary bit stream, said apparatus comprising:

byte counter means, responsive to the byte formed signal, for counting the number of bytes in the binary bit stream, said byte counter means including:

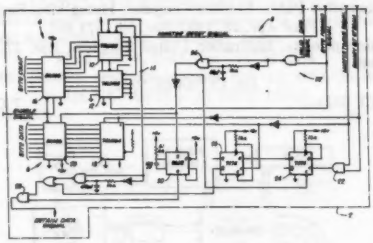
binary counter integrated circuit means for incrementing a count in response to the byte formed signal; and

byte counter buffer means for retaining the count provided by said binary counter integrated circuit means;

binary bit signal storage means, responsive to the binary bit stream and the master timing signal, for sequentially storing each binary bit within each of the bytes containing the predetermined number of binary bits, said binary bit signal storage means including:

shift register means having serial input means for receiving the serial binary bit stream and also having parallel output means, said parallel output means having a number of output lines equal in number to the predetermined number of binary bits in one of said bytes; and

shift register buffer means for retaining a byte of the binary bits provided on said parallel output means of said shift register means; and



control means, responsive to the binary bit stream, the master timing signal, and the byte formed signal, for generating a control signal for retaining the count of said byte counter means and the binary bits of said binary signal storage means when at least one of the stored binary bits has a predetermined logic value, said control means including:

first AND gate means for logically combining the master timing signal and the binary bit stream and for providing an output of the logical combination;

first flip-flop means having an output responsive to the output of said first AND gate;

second flip-flop means having an output responsive to the output of said first flip-flop means and the master timing signal;

third flip-flop means having an output responsive to the byte formed signal; and

second AND gate means for providing the control signal in response to the output of said second flip-flop means and the output of said third flip-flop means.

4,495,640

ADJUSTABLE DISTORTION GUITAR AMPLIFIER

Douglas R. Frey, 1980C Allwood Dr., Bethlehem, Pa. 18018

Filed Jun. 28, 1982, Ser. No. 392,538
Int. Cl.³ H03G *3/00*
U.S. Cl. 381—61 **18 Claims**

1. A programmable adjustable distortion amplifier, especially for amplifying music, comprising:

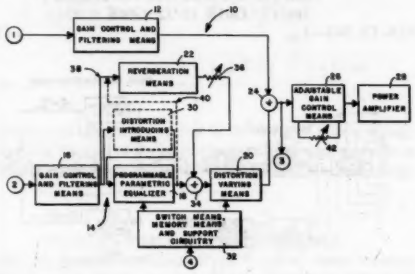
(a) means for adjustably controlling amplifier gain;

(b) means for adjustably filtering high and low frequency components of signal processed by said amplifier;

(c) means for selectably controlling amplitude of signal processed by said amplifier within an adjustably preselected bandwidth centered about an adjustably preslected frequency, all in response to a first control signal provided thereto;

(d) means for varying distortion and gain of signal processed by said amplifier by an adjustably preselectable amount in response to a second control signal provided thereto;

(e) means, responsive to operator input, for generating said first and second control signals; and



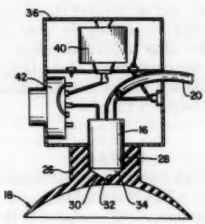
(f) memory means for storing a plurality of sets of said first and second control signals and delivering a selected one of said sets to said amplitude controlling means and distortion varying means in response to an operator supplied stimulus.

4,495,641

MICROPHONE PICKUP FOR MUSICAL INSTRUMENTS

Raymond Vernino, 155 Yo. Hubbard Rd., #9, Hubbard, Ohio 44425

Filed Jul. 11, 1983, Ser. No. 512,345
Int. Cl.³ H04R *1/46*
U.S. Cl. 381—91 **5 Claims**

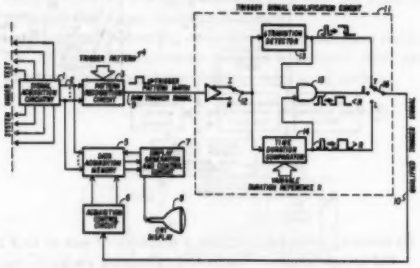


1. In combination, an audio pickup adapted to be secured to a musical instrument or the like comprising a suction cup in the general form of a hollow spherical segment formed from elastomeric material, a projection extending upwardly from the top of said spherical segment, an open-ended, cup-shaped recess formed in said projection, said recess having a closed bottom above the inner periphery of said segment, a condenser-type microphone received within said recess with the bottom of said microphone spaced from the bottom of said recess to form in said recess an airtight-resonating chamber, and a musical instrument having a resonator means including a sounding board, said suction cup being pushed against the sounding board to affix the audio pickup thereon with said microphone out of contact therewith such that sound vibrations from the sounding board are transmitted to said condenser-type microphone through said resonating chamber.

4,495,642
TIMING ANALYZER WITH COMBINATION TRANSITION AND DURATION TRIGGER

Joel A. Zellmer, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 26, 1982, Ser. No. 352,672
Int. Cl.³ G01R *13/32*; G06K *9/00*
U.S. Cl. 382—1 **5 Claims**



1. A logic timing analyzer or the like, comprising:

signal acquisition means for receiving a collection of fluctuating input data signals to be compared against logical thresholds and for producing from the fluctuating input data signals a corresponding collection of acquired signals;

pattern recognition means coupled to the collection of acquired signals for causing a recognition signal to appear for any duration that the collection of acquired signals matches a preselected pattern and for causing the recognition signal to disappear for any duration that the collection of acquired signals differs from the preselected pattern;

trigger signal generation means coupled to the recognition signal for producing a trigger signal when the duration between an appearance of the recognition signal and a subsequent disappearance thereof is less than a preselected duration;

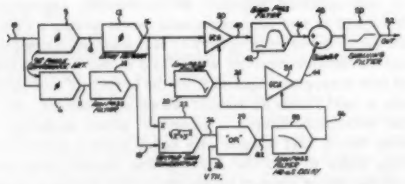
a data acquisition memory, coupled to the collection of acquired signals and the trigger signal, and responsive to the trigger signal by ceasing to store the collection of acquired signals after a predetermined amount of time subsequent to the occurrence of the trigger signal; and

display means coupled to the data acquisition memory for displaying the contents thereof.

4,495,643
AUDIO PEAK LIMITER USING HILBERT TRANSFORMS

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Filed Mar. 31, 1983, Ser. No. 480,921
Int. Cl.³ H04B *15/00*
U.S. Cl. 381—94 **21 Claims**



1. An audio-frequency peak limiter comprising:

filter means for filtering an audio frequency signal into a first band which includes low-frequency signals and a second band which includes high frequency signals;

first clipping means for providing clipping with substantially no harmonic distortion of a signal, coupled to said filter means for receiving said first band;

second clipping means for providing audio frequency clipping of a signal coupled to said filter means for receiving said second band;

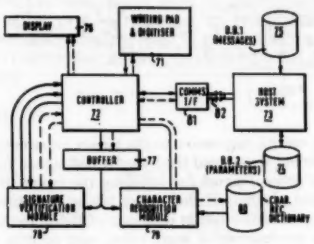
combining means coupled to said first and second clipping means for combining the outputs of these means to provide a peak limited audio signal;

whereby a peak limiter is realized which provides low harmonic distortion for low-frequency signals and which permits harmonic distortion only when excited by high frequencies.

4,495,644
APPARATUS FOR SIGNATURE VERIFICATION

John R. Parks, West Byfleet; David R. Carr, Corfe Mullen, and Peter F. Fox, Verwood, all of England, assignors to Quest Automation Public Limited Company, Hampshire, England

Filed Apr. 26, 1982, Ser. No. 371,886
Claims priority, application United Kingdom, Apr. 27, 1981, 8112949
Int. Cl.³ G06K *9/62*
U.S. Cl. 382—3 **7 Claims**



1. Apparatus for comparing a working signature of an individual to verify the working signature, comprising:

a transducer responsive to the pressure of a pointed writing instrument when the individual writes on a sheet of paper that overlies the transducer, which transducer generates digital electronic signals in real time representing the position of the tip of the writing instrument in terms of X and Y coordinates relative to a predetermined origin of coordinates,

means arranged to sample at a rapid rate the X and Y coordinates and therefrom to determine the changes from one sample of each coordinate to the next,

program memory means in which is stored algorithms for identifying significant features of the signature including upper and lower turning points of loops, points at which the writing instrument is applied to and lifted from the paper, and lengths of segments of the signature, and

digital electronic processor means arranged to operate according to said stored algorithms to:

a. compute from said changes in X and Y coordinates, from one sample of each coordinate to the next, mathematical parameters representing said significant features of said working and sample signatures,

b. derive from several specimen signatures for said individual means values and spread indicators of said mathematical parameters and to store said mean values and spread indicators for said individual in data memory means,

c. respond to a working signature of the individual by calculating the differences between said parameters of said working signature and said mean values of said

parameters for said individual retrieved from said data memory means,

d. calculate for each parameter according to said spread indicator a first difference limit and a second larger difference limit and to calculate a first score for said parameter that corresponds to less than the calculated difference if the difference is less than the first limit, to calculate a second score that corresponds to the calculated difference if the difference is between the first and second limits, and to calculate a third score that is substantially larger than the calculated difference if said calculated difference is greater than the second limit, and

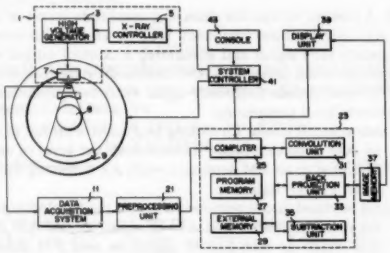
e. adds the scores for the several parameters and rejects the working signature if the total score exceeds a threshold, said substantially larger third score being such that said threshold will be exceeded if the calculated difference of any parameter exceeds the second limit.

4,495,645

COMPUTED TOMOGRAPHY DEVICE

Akinami Ohhashi, Omiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 9, 1982, Ser. No. 347,334
Claims priority, application Japan, Feb. 12, 1981, 56-19476
Int. Cl.³ A61B *6/00*; G06F *15/42*
U.S. Cl. 382—6 **16 Claims**



1. A method for reconstructing an image by a computed tomography device which obtains reconstruction image data corresponding to a plurality of dynamic images generated by projection data strings which are acquired by rotary scanning through an angle exceeding an angle corresponding to one reconstruction image, comprising the steps of:

(a) acquiring a group of projection data strings, including time-serial projection data strings, corresponding to a desired reconstruction CT image and determining the difference between each said time-serial projection data string corresponding to said reconstruction CT image, and the respective projection data string corresponding in position therewith, to obtain differential data strings;

(b) convolving and back-projecting the projection data strings to produce the reconstruction CT image; and

(c) convolving the differential data strings and further back-projecting the convolved differential data on the reconstruction CT image which is obtained in the step (b).

4,495,646

ON-LINE CHARACTER RECOGNITION USING CLOSED-LOOP DETECTOR

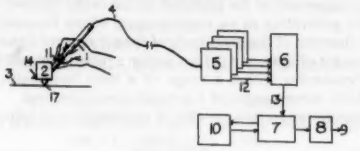
Nader Gharachorloo, H3F Lansing W., Ithaca, N.Y. 14850

Filed Apr. 20, 1982, Ser. No. 370,084
Int. Cl.³ G06K *9/24*
U.S. Cl. 382—13 **17 Claims**

1. The method of recognizing handwritten characters being written by a stylus upon a writing surface, comprising:

a. sensing stylus contact with the writing surface;

b. sensing all directions traveled by the stylus upon the writing surface using a closed-loop detector;



c. storing all directions sensed in the form of a data string;

d. sensing the end of stylus contact with the writing surface;

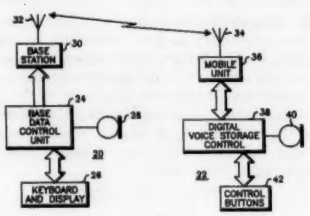
e. matching the stored string with a table of known strings.

4,495,647

DIGITAL VOICE STORAGE MOBILE

Timothy M. Burke, Fort Worth; Paul F. Smith, North Richland Hills; Scott W. Noble, and Eric R. Schorman, both of Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1982, Ser. No. 447,373
Int. Cl.³ H04B *7/24*
U.S. Cl. 455—38 **6 Claims**



4. A radio control terminal for the secondary stations in a multi-unit communications system for voice and communications, having a primary station and a plurality of secondary stations each primary station adapted to transmit and receive both a command data packet including an address and voice message, and each secondary station including a microphone to permit input of voice messages by an operator, said control terminal comprising:

means for receiving a command data packet from the primary station including a record command and an address corresponding to the predetermined station address of the respective secondary station; and,

memory means for digitizing and storing voice messages transmitted to the secondary station by the primary station in response to said record command receipt.

4,495,648

TRANSMITTER POWER CONTROL CIRCUIT

Adolf J. Giger, Boxford, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1982, Ser. No. 453,513
Int. Cl.³ H04B *1/38*
U.S. Cl. 455—73 **18 Claims**

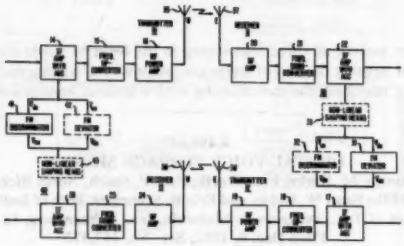
1. A radio transceiver comprising:

a receiver section capable of receiving an information signal destined for an end user in a predetermined channel from a remote, immediately preceding, transmitter of a radio system, the receiver section comprising amplifier means including an automatic gain control (AGC) arrangement capable of generating a d-c control signal which has a magnitude that (a) is a function of the amplitude of the received information signal at any instant of time and (b)

can vary between a predetermined range of amplitude levels;

means responsive to the d-c control signal from the AGC arrangement of the amplifier means in the receiver section for generating an a-c control signal whose frequency is (a) a function of the magnitude of the d-c control signal at any instant of time, and (b) lies within a predetermined band of frequencies within a range of a loop bandwidth of the AGC arrangement of the receiver section; and

a transmitter section capable of transmitting an information



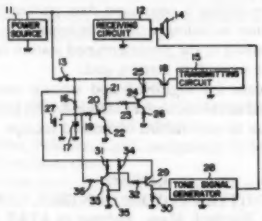
signal destined for a remote end user in a predetermined transmission channel to a remote, next sequential, receiver of the radio system associated with said remote transmitter, the transmitter section comprising amplifier means including an AGC arrangement which is responsive to the a-c control signal from the generating means for amplitude modulating (AM) the amplitude of the information signal transmitted in the predetermined transmission channel to the remote, next sequential, receiver in accordance with the frequency variations of said a-c control signal from the generating means.

4,495,649

POWER SOURCE DEVICE FOR PORTABLE TYPE RADIO APPARATUS

Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,411
Claims priority, application Japan, Dec. 30, 1981, 56-211401
Int. Cl.³ H04B *1/02, 17/00*
U.S. Cl. 455—115 **3 Claims**



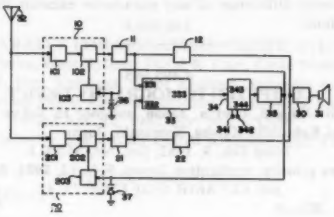
1. A power source device for operating a portable type radio apparatus having a transmitting circuit, comprising: a power source, a time constant circuit including a capacitor connected to the output side of said power source and a switching circuit coupled to said time constant circuit and said power source for applying the power source voltage to said transmitting circuit to effect the operation thereof for a predetermined time, delay timing circuit means operative to produce an output signal after the lapse of a preset time by an output signal of said time constant circuit, a tone signal generating circuit responsive to the output signal of said delay timing circuit means to generate a tone signal representative of the fact that a required time related to said preset time has passed, and switch means connected in parallel with the capacitor of said time constant circuit for effecting a continuation of the operation of said transmitting circuit.

4,495,650

ELECTRONIC TUNING TYPE RADIO RECEIVERS

Hideo Konishi; Kazunori Matsuoka, and Takao Gouya, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 330,609, Dec. 14, 1981, abandoned, which is a continuation of Ser. No. 124,852, Feb. 26, 1980, abandoned. This application Aug. 25, 1983, Ser. No. 526,222
Claims priority, application Japan, Feb. 26, 1979, 54-22404
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—144 **3 Claims**



1. A control circuit for detecting amplitude levels of either an AM intermediate frequency (IF) or an FM intermediate frequency (IF) signal and generating a control output signal therefrom when either said AM intermediate frequency signal or FM intermediate frequency signal exceeds a predetermined amplitude level comprising:

mode selector means for setting said control circuit in either an AM detection mode for detecting the level of an AM IF signal or an FM detection mode for detecting the level of an FM IF signal;

input terminal means responsive to said mode selector means for receiving either said AM IF signal in said AM detection mode or said FM IF signal in said FM detection mode;

oscillator means responsive to said mode selector means for generating an oscillating voltage output signal of a selected frequency when said mode selector switch is set in said FM detection mode;

mixer/amplifier means coupled to said input terminal means and an output of said oscillator means for mixing the FM IF signal at said input terminal means with said oscillating voltage output signal of said oscillator means to create a modified FM signal in the frequency range of said AM IF signal and amplifying either said AM IF signal or said modified FM signal; and

level detector means for measuring the amplitude level of said AM IF signal when said mode selector means is in said AM detection mode and the amplitude level of said modified FM signal when said mode selector means is in said FM detection mode, and generating said control output signal when either amplitude level exceeds a predetermined level.

4,495,651

BROADCAST RECEIVER COMPRISING AN ENTIRELY ELECTRONIC CONTROL DEVICE

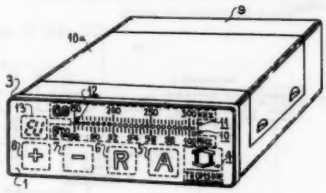
Denis Froeliger, Paris, France, assignor to Societe d'Electronique Industrielle d'Elbeuf-Elindel, Paris, France

Filed Dec. 6, 1982, Ser. No. 446,891
Claims priority, application France, Dec. 9, 1981, 81 23029
Int. Cl.³ H04B *1/08, 1/16*
U.S. Cl. 455—158 **21 Claims**

1. A radio receiver free of control knobs and mechanical

switches, which displays control information when operated and marks the information when not operated thereby disguising the identity of the receiver as such when not operated, the receiver comprising:

a receiver housing mounting a substantially planar front plate thereto which is tinted and light transmissive, said plate being free of any observable portions construable as enabling control of said receiver;



a plurality of control areas located at the rear of the plate for sensing touch of said plate and causing change in a respective plurality of control functions of the receiver thus altering its operation;

first light source means located at the rear of the front plate for displaying operating frequency information only when the receiver is operated; and

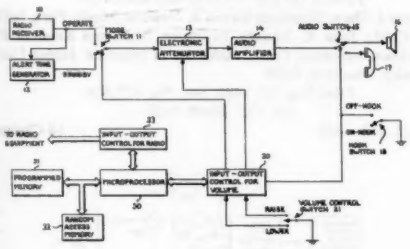
second light source means located at the rear of the front plate for back-lighting the control areas only when the receiver is operated.

4,495,652

CONTROL ARRANGEMENT FOR RADIO APPARATUS

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Feb. 28, 1983, Ser. No. 470,096
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—234 **12 Claims**



1. Apparatus for controlling the output volume of radio apparatus having multiple output modes of operation comprising:

a. means for selecting an output mode of operation of the radio apparatus;

b. a single device for selectively setting volume and sending volume setting information to a microprocessor for each output mode of operation;

c. said microprocessor capable of sensing the selected mode of operation and receiving volume setting information;

d. a memory device associated with said microprocessor for storing volume setting information corresponding to each mode of operation; and

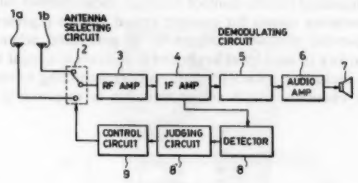
e. wherein said microprocessor, upon sensing a selected mode of operation, is capable of retrieving the corresponding volume setting information and sending it to an attenuator to adjust audio signals supplied by the radio apparatus, and wherein said microprocessor is further capable of monitoring volume setting information from said selective volume setting device and updating said memory for the selected mode.

4,495,653

DIVERSITY RECEIVER

Masanori Hamada, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,293
Claims priority, application Japan, Apr. 30, 1982, 57-73840
Int. Cl.³ H04B *1/16, 7/08*
U.S. Cl. 455—277 **1 Claim**



1. A diversity receiver which comprises:

a plurality of antennas;

an antenna selecting means to which said antennas are connected;

a receiver to which an antenna output from said antenna selecting means is applied;

a detector means to detect a signal voltage responsive to said antenna output from the output of an intermediate frequency amplifier of said receiver;

a judging means responsive to said signal voltage from said detector means to generate a judgement signal indicating whether receiving condition of operating one of the antennas is good or not;

a control means responsive to said judgement signal from said judging means to actuate said antenna selecting means so as to select one of said antennas which is in a good receiving condition;

said judging means including a comparator and two paths connecting two input terminals of said comparator to said detector means for comparing two inputs applied to said input terminals, one of said paths including a time constant circuit and the other including a bias applying means, at least one diode being connected between said detecting means and said two paths of the judging means.

4,495,654

REMOTE CONTROLLED RECEIVER WITH PROVISIONS FOR AUTOMATICALLY PROGRAMMING A CHANNEL SKIP LIST

Michael S. Deiss, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1983, Ser. No. 479,985
Int. Cl.³ H04B *1/00;* **H04N** *5/44*
U.S. Cl. 455—151 **7 Claims**

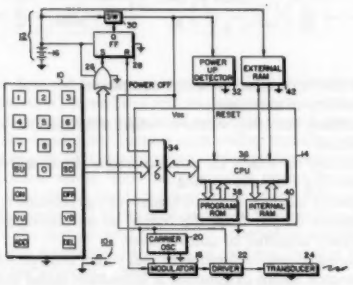
1. A remote control system of a communications receiver including channel tuning apparatus, comprising:

a remote control transmitter including a remote keyboard having at least one scan key; remote channel number generating means for causing coded signals representing sequential channel numbers to be generated when said scan key of said remote keyboard is activated; a remote memory including memory locations corresponding to respective channels which are addressable in response to said coded channel number representative signals, each of said memory locations storing a coded indication of whether or not the respective channel is preferred for reception; remote memory examining means for examining the contents of addressed ones of said memory loca-

tions of said remote memory and causing said remote channel number generating means to stop changing said coded channel number representative signals when an addressed one of said memory locations contains a preferred channel indication; and transmitting means for transmitting in a remote control message the coded channel number representative signals generated by said remote channel number generating means;

a local keyboard mounted on said communications receiver including at least one scan key of the same type as said scan key of said remote keyboard;

a remote control receiver included within said communication receiver including receiving means for receiving a transmitted remote control message; local channel number generating means for causing coded signals representing sequential channel numbers to be generated when said scan key of said local keyboard is activated; a local memory including memory locations corresponding to respective channels which are addressable in response to said



coded channel number representative signals generated by said local channel number generating means, each of said memory locations of said local memory storing a coded indication of whether or not the respective channel is preferred for reception; local memory examining means for examining the contents of addressed ones of said memory locations of said local memory and causing said local channel number generating means to stop changing said coded channel number representative signals when an addressed one of said memory locations contains a preferred channel indication; and programming means responsive to said remote control message for automatically programming said local memory with the same preferred and nonpreferred channel information as is contained in said remote memory; and

tuning means included within said communications receiver and responsive to the coded channel number representative signals generated by said local channel number generating means to tune the corresponding channel.

4,495,655

TESTABLE OPTICALLY ISOLATED CONTROL CIRCUIT

Michael R. Benson; William D. Hill; Garrett G. OBrien, and Dennis W. Hollenbeck, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 402,368, Jul. 27, 1982,. This application Nov. 15, 1982, Ser. No. 442,395

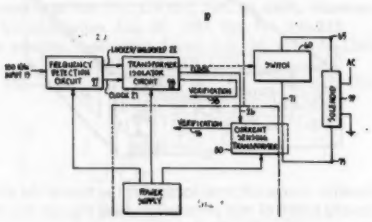
Int. Cl.³ H04B *9/00*

U.S. Cl. 455—603 **5 Claims**

1. In an electronic relay switch of the type controlled by an alternating input signal, and providing an operation verification output signal to, a controller from which said relay switch is otherwise isolated, said switch having an isolated ground terminal, and full wave rectifying means to rectify said alternating signal into a switch actuating control voltage, the improvement therewith comprising:

a frequency detection circuit including a narrow bandpass input filter connected to receive said alternating input signal and providing an alternating control signal to said rectifying means;

switch elements including first and second pluralities of hexfet transistors having drain leads connected to first and second nodes respectively, source leads connected to said isolated ground terminal, and gate leads connected to said rectifying means for receiving said switch actuating control voltage;



a fast turn-off circuit connected between said rectifying means and said gate leads for rapidly discharging the gate capacity of said hexfet transistors;

operation verification means including a switch current sensing transformer having two windings, a first of said windings being connected in series with said hexfet transistors between said first and second nodes whereby current in said first of said windings controls the voltage across the second of said windings; and

means controlled by said voltage across said second of said windings for providing said operation verification signal.

4,495,656

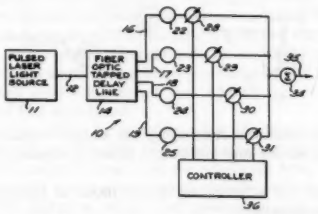
FIBER OPTIC WORD GENERATOR

Herbert J. Shaw, Stanford; Steven A. Newton, Menlo Park, both of Calif.; John E. Bowers, Milltown, N.J., and Kenneth P. Jackson, Stanford, Calif., assignors to Stanford Junior University, Stanford, Calif.

Filed Sep. 13, 1982, Ser. No. 417,506

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—608 **14 Claims**



1. A method for generating a digital word comprising the steps of:

introducing a pulsed optical signal into a tapped fiber optics delay line in which a portion of each pulse of the pulsed optical signal is removed from the fiber at each of a plurality if taps on the fiber to produce a sequence of optical pulses;

detecting the optical pulses;

digitally weighting each optical pulse to produce a sequence of digital logic signals; and

combining the sequence of digital logic signals to produce a binary word.

277,234

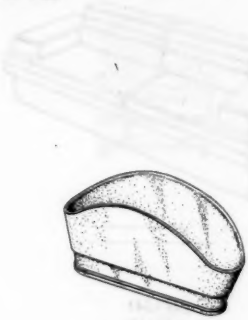
MOLDED EDIBLE CONTAINER

Herbert M. Bank, Owings Mills, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation of Ser. No. 329,930, Dec. 11, 1981, abandoned. This application Jan. 6, 1984, Ser. No. 568,292

Term of patent 14 years

U.S. Cl. D1—122



277,235

COOKED MEAT PRODUCT

Rene Arend, Chicago, Ill., assignor to Restaurant Technology, Inc.

Division of Ser. No. 228,193, Jan. 26, 1981, Pat. No. Des. 270,299. This application Sep. 30, 1982, Ser. No. 431,824

Term of patent 14 years

U.S. Cl. D1—199

277,236

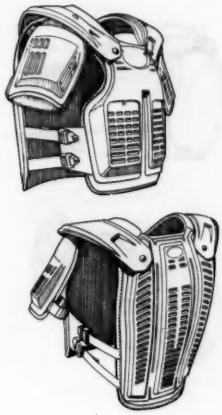
CHEST PROTECTOR

John R. Gregory, 515 Otay Valley Rd., Chula Vista, Calif. 92011

Filed Jul. 6, 1982, Ser. No. 395,483

Term of patent 14 years

U.S. Cl. D2—27



277,237

HOLDER FOR FITTING AN ACCESSORY, ESPECIALLY AN EAR MUFF, TO A SAFETY HELMET

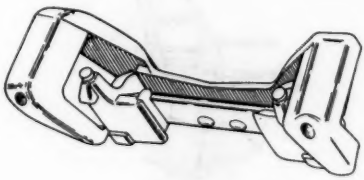
Bo G. Lönnstedt, Kvarnbergsvägen 23, S-141 45 Huddinge, Sweden

Filed Jul. 26, 1982, Ser. No. 401,931

Claims priority, application Sweden, Jan. 26, 1982, 82-0158

Term of patent 14 years

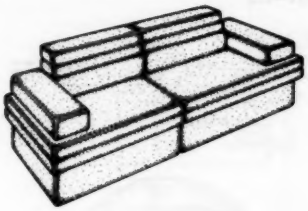
U.S. Cl. D2—233



277,238
BOXING GLOVE
George R. Cass, Brockamsin, Leigh, Worcester, England
Filed Sep. 23, 1982, Ser. No. 422,298
Claims priority, application United Kingdom, Mar. 23, 1982, 1005751
Term of patent 14 years
U.S. Cl. D2—361

277,239
VEHICLE CREW SEAT OR THE LIKE
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 29, 1982, Ser. No. 426,598
Term of patent 14 years
U.S. Cl. D6—356

277,240
SOFA OR SIMILAR ARTICLE
Jack G. Dunbar, New York, N.Y., and Steven Brooks, Greenwich, Conn., assignors to Dunbar Furniture, Inc., Berne, Ind.
Filed Sep. 29, 1982, Ser. No. 426,525
Term of patent 14 years
U.S. Cl. D6—381



277,241
CHAIR
Henry Massonnet, Nurieux, France (01760)
Filed Sep. 17, 1982, Ser. No. 419,255
Claims priority, application France, Mar. 25, 1982, 821051
Term of patent 14 years
U.S. Cl. D6—368

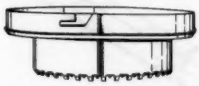
277,242
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti s.r.1, Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,540
Claims priority, application Italy, Mar. 9, 1982, 21080 B/82
Term of patent 14 years
U.S. Cl. D6—381

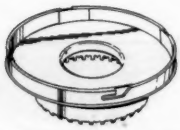
277,243
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti s.r.1, Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,541
Claims priority, application Italy, Mar. 9, 1982, 21082 B/82
Term of patent 14 years
U.S. Cl. D6—381

277,244
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti S.n.c., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,687
Claims priority, application Italy, Mar. 9, 1982, 21077/82[U]
Term of patent 14 years
U.S. Cl. D6—381

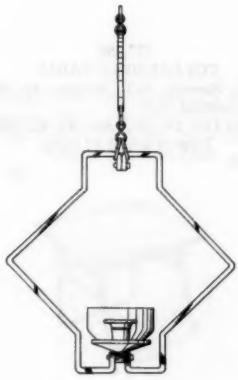
277,245
FURNITURE FOOT STOOL
Richard Unverzagt, 2742 NW. 30 Way, Ft. Lauderdale, Fla. 33311
Filed Sep. 17, 1982, Ser. No. 419,607
Term of patent 14 years
U.S. Cl. D6—351

277,246
CUTTING ATTACHMENT FOR PAPER ROLL HOLDER OR SIMILAR ARTICLE
Ingemar Sjöstedt, Västra Frölunda, and Bertil Lunden, Hovås, both of Sweden, assignors to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed Sep. 28, 1982, Ser. No. 425,267
Claims priority, application Sweden, Apr. 1, 1982, 82-0854
Term of patent 14 years
U.S. Cl. D6—523

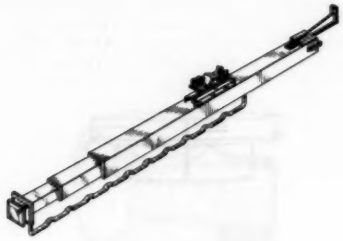




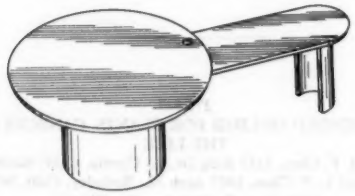
277,247
SUSPENDED HOLDER FOR PLANTS, CANDLES OR THE LIKE
David M. F. Chan, 1213 King Dr., El Cerrito, Calif. 94530, and Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708
Filed Sep. 15, 1983, Ser. No. 532,659
Term of patent 14 years
U.S. Cl. D6—405



277,248
EXTENDABLE TIE RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Filed Dec. 27, 1982, Ser. No. 453,052
Term of patent 14 years
U.S. Cl. D6—324



277,249
COMBINED TABLE AND SIDE EXTENSION UNIT
Jack G. Dunbar, New York, N.Y., assignor to Dunbar Furniture, Inc., Berne, Ind.
Filed Sep. 29, 1982, Ser. No. 427,203
Term of patent 14 years
U.S. Cl. D6—483

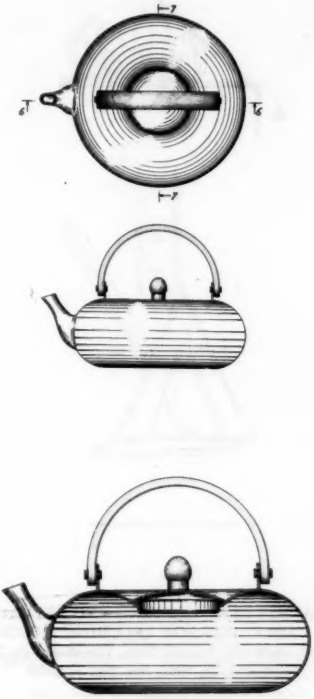


277,250
COLLAPSIBLE TABLE
Claude Bernard, Summit, N.J., assignor to Charvoz-Carsen Corporation, Fairfield, N.J.
Filed Oct. 28, 1982, Ser. No. 437,458
Term of patent 14 years
U.S. Cl. D6—420

277,251
SERVING DISH OR THE LIKE
Gerald D. Gulotta, New City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 16, 1982, Ser. No. 408,066
Term of patent 14 years
U.S. Cl. D7—20

277,252
COVER FOR A BAKING DISH OR THE LIKE
Gerald D. Gulotta, New City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 16, 1982, Ser. No. 408,067
Term of patent 14 years
U.S. Cl. D7—40

277,253
TEAKETTLE
Michael Lax, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,473
Term of patent 14 years
U.S. Cl. D7—320

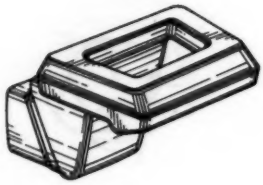


277,254
FRYING PAN
Shoji Matsuhisa, Osaka, Japan, assignor to The Nippon Aluminium Mfg. Co. Ltd. and The Nippon Alumi Tsurumaru Corp. Co., both of Osaka, Japan
Filed Jun. 1, 1982, Ser. No. 383,972
Claims priority, application Japan, Oct. 9, 1981, 56-44969
Term of patent 14 years
U.S. Cl. D7—359

277,255
BOTTLED WATER DISPENSER INSERT
William R. Deruntz, 24672 Toledo La., El Toro, Calif. 92630
Filed Sep. 27, 1982, Ser. No. 424,650
Term of patent 14 years
U.S. Cl. D7—387

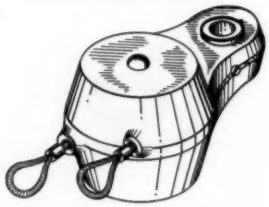
277,256
CARRIER WITH HANDLE OR THE LIKE
Augusto A. Picozza, Johnston, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 6, 1982, Ser. No. 395,437
Term of patent 14 years
U.S. Cl. D7—394

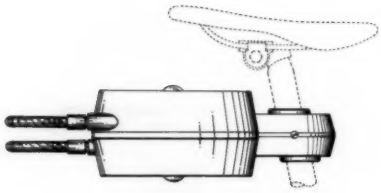
277,257
HANDLE
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Nov. 15, 1982, Ser. No. 441,871
Term of patent 14 years
U.S. Cl. D7—394



277,258
HOE HEAD
Jess G. Baty, Rte. 4, Box 218, Forrest City, Ark. 72335
Filed Sep. 20, 1982, Ser. No. 420,589
Term of patent 14 years
U.S. Cl. D8—11

277,259
COMBINATION REEL HOUSING AND RETRACTABLE DUAL CABLE UNIT FOR SECURING A BICYCLE
Jack Darrell, 1646 Old Spanish Trail, Houston, Tex. 77054
Filed Apr. 28, 1982, Ser. No. 372,603
Term of patent 14 years
U.S. Cl. D8—358



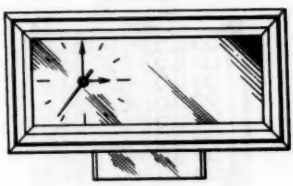


277,260
COLLAPSIBLE REEL
James A. Dickens, Greensboro, N.C., assignor to Percy O. Rucks, Greensboro, N.C.
Filed Jul. 21, 1982, Ser. No. 400,456
Term of patent 14 years
U.S. Cl. D8—358

277,261
HOSE REELER
William King, 79 Allison Rd., Elsternwick, Victoria, 3185, Australia
Filed Sep. 13, 1982, Ser. No. 417,545
Claims priority, application Australia, Mar. 18, 1982, 86817
Term of patent 14 years
U.S. Cl. D8—358

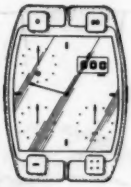
277,262
PACKAGING SLEEVE
David A. Jones, Kettering, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Aug. 4, 1982, Ser. No. 405,140
Term of patent 14 years
U.S. Cl. D9—306

277,263
CLOCK
Ronnie Culpepper, 20194 Cooley, Detroit, Mich. 48219
Filed Sep. 30, 1982, Ser. No. 431,840
Term of patent 14 years
U.S. Cl. D10—26

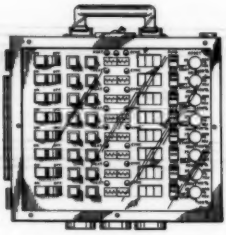


277,264
WATCH CASE
Umberto Maglioli, Via En Lissoni 25, Monza, Italy
Filed Jul. 6, 1982, Ser. No. 395,601
Term of patent 14 years
U.S. Cl. D10—31

277,265
WATCH CASE
Umberto Maglioli, Via En Lissoni 25, Monza, Italy
Filed Jul. 6, 1982, Ser. No. 395,602
Term of patent 14 years
U.S. Cl. D10—31



277,266
TEMPERATURE CONTROL APPARATUS
Richard Littlefield, P.O. Box 285, Kennebunk, Me. 04043
Filed Aug. 23, 1982, Ser. No. 410,314
Term of patent 14 years
U.S. Cl. D10—50



277,267
CLINICAL PROBE HOLDER AND CONNECTOR
Wallace L. Knute, Del Mar, Calif., assignor to Camino Laboratories, San Diego, Calif.
Filed Sep. 7, 1982, Ser. No. 415,239
Term of patent 14 years
U.S. Cl. D10—60

277,268
VELOCIPEDE HORN
David S. Cutlip, and Judyth A. Cutlip, both of 179 Candlewood Path, Dix Hills, N.Y. 11746
Filed Jun. 2, 1982, Ser. No. 384,377
Term of patent 14 years
U.S. Cl. D10—120

277,269
ORNAMENT
William J. Williams, Shelbyville, Ind., assignor to Williams Industries, Inc., Shelbyville, Ind.
Filed Sep. 27, 1982, Ser. No. 423,787
Term of patent 14 years
U.S. Cl. D11—121

277,270
ORNAMENT FOR TABLE OR OTHER SUPPORTING SURFACE

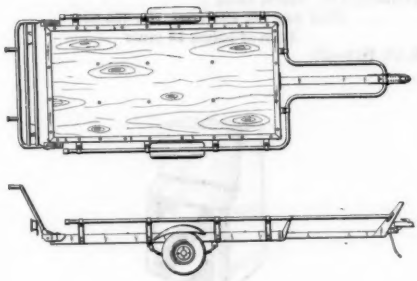
Frank Deeley, Villa Coolins, Ilsham Marine Dr.; Lawrence Deeley, 45 Broadley Dr., and Kevin P. Burnett, 11a Braddons Hill Rd. West, all of Torquay, Devon, England

Filed Jul. 14, 1982, Ser. No. 398,266
Claims priority, application United Kingdom, Jan. 15, 1982, 1004626
Term of patent 14 years
U.S. Cl. D11—158

277,271
TRAILER

Denny B. Law, San Marcos, Calif., assignor to Unique Functional Products, San Marcos, Calif.

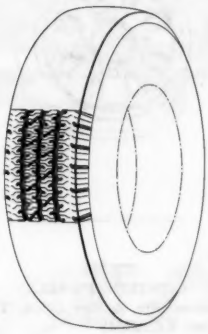
Filed Nov. 29, 1982, Ser. No. 445,057
Term of patent 14 years
U.S. Cl. D12—101



277,272
TIRE TREAD AND BUTTRESS

Donald J. Sladky, Cuyahoga Falls, and William J. Vande Water, Stow, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

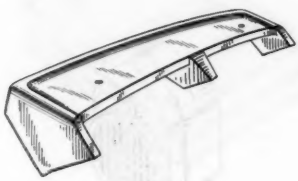
Filed Apr. 14, 1982, Ser. No. 368,344
Term of patent 14 years
U.S. Cl. D12—146



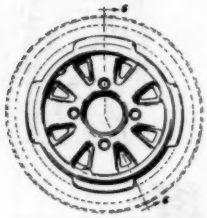
277,273
AUTO SPOILER

Gerhard Schmidt, Wuppertal, Fed. Rep. of Germany, assignor to Westfalische Metall Industrie KG Hueck & Co, Lippstadt, Fed. Rep. of Germany

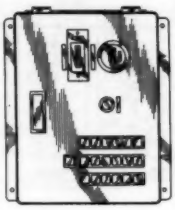
Filed Oct. 20, 1982, Ser. No. 435,506
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 8XA-004-317
Term of patent 14 years
U.S. Cl. D12—181



277,274
WHEEL SPIDER
Raymond D. Frazee, Waldron, Ind., assignor to Indus Wheel Company, Division of Carlisle Corporation, Cincinnati, Ohio
Filed Jul. 8, 1982, Ser. No. 396,459
Term of patent 14 years
U.S. Cl. D12—211

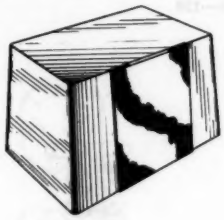


277,275
CONTROL PANEL
William R. Dickerson, Rte. 4, Box 251-A, Three & Twenty School Rd., Easley, S.C. 29640
Filed May 22, 1981, Ser. No. 266,358
Term of patent 14 years
U.S. Cl. D13—35

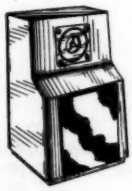


277,276
SPRING DRIVEN PHONOGRAPH FOR INTERNAL PLACEMENT IN TOYS OR THE LIKE
Katsumi Watanabe, Kawasaki, Japan, assignor to Ozen Corporation, Tokyo, Japan
Filed Aug. 27, 1981, Ser. No. 296,652
Claims priority, application Japan, May 12, 1981, 56/20111
Term of patent 14 years
U.S. Cl. D14—14

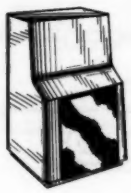
277,277
LOUDSPEAKER HOUSING
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,622
Term of patent 14 years
U.S. Cl. D14—33



277,278
ELECTRONIC LOUDSPEAKER CABINET
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,623
Term of patent 14 years
U.S. Cl. D14—33

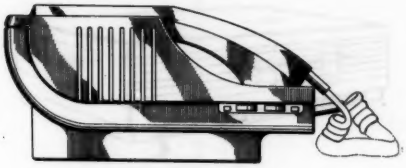


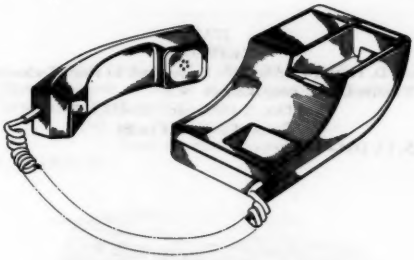
277,279
CABINET FOR LOUDSPEAKER
Hari Matsuda, Evanston, Ill., assignor to Aspen Recreational Products, Ltd., Aspen, Colo.
Filed Aug. 10, 1982, Ser. No. 405,624
Term of patent 14 years
U.S. Cl. D14—33



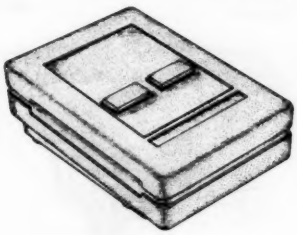
277,280
TELEPHONE
Myra Winkler, West Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.
Continuation-in-part of Ser. No. 337,471, Jan. 6, 1982,. This application Mar. 15, 1982, Ser. No. 358,423
The portion of the term of this patent subsequent to Jan. 8, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—53

277,281
MOBILE TELEPHONE UNIT
Masakazu Tsukamoto, Funabashi, and Satoru Tsukiyama, Tokyo, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1982, Ser. No. 426,224
Claims priority, application Japan, Mar. 31, 1982, 57-13520
Term of patent 14 years
U.S. Cl. D14—53

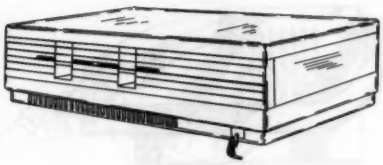




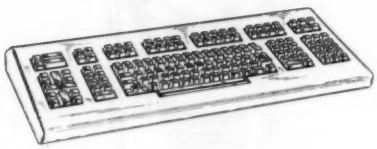
277,282
CONFERENCE TELEPHONE MICROPHONE CONTROL UNIT
William L. Barton, III, Holmdel; Edward J. Peterson, Eatontown, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 17, 1982, Ser. No. 358,915
Term of patent 14 years
U.S. Cl. D14—59



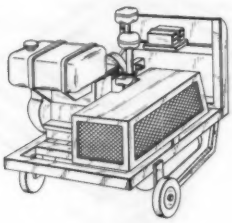
277,283
COMPUTER CONSOLE
Edward H. Empson, San Jose; Robert D. Brunner, Oakland, and Gerard A. Fubershaw, Mountain View, all of Calif., assignors to Fortune Systems Corporation, Redwood City, Calif.
Filed Jun. 1, 1982, Ser. No. 383,748
Term of patent 14 years
U.S. Cl. D14—100



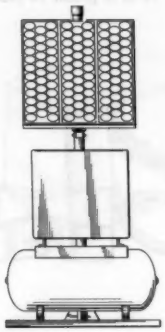
277,284
KEYBOARD
Gary D. Horne, Highland, N.Y., assignor to High Technology Solutions, Inc., Poughkeepsie, N.Y.
Filed Oct. 1, 1982, Ser. No. 432,311
Term of patent 14 years
U.S. Cl. D14—100



277,285
MULTI-PURPOSE PORTABLE POWER UNIT
Gilbert Lopez, 1520 Buster St., Simi, Calif. 93065
Filed Feb. 26, 1982, Ser. No. 352,870
Term of patent 14 years
U.S. Cl. D15—1

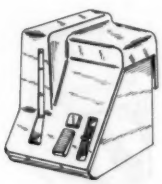


277,286
SOLAR POWERED VALVE CONTROL UNIT
Mark A. Schnatzmeyer, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 27, 1982, Ser. No. 412,381
Term of patent 14 years
U.S. Cl. D15—21

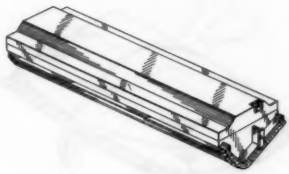


277,287
COMBINED ROUTER AND BEVELER FOR GLASS
William F. Baer, 1509 N. Darcy St., Simi Valley, Calif. 93065
Filed Aug. 19, 1982, Ser. No. 409,359
Term of patent 14 years
U.S. Cl. D15—124

277,288
PRINT UNIT FOR USE WITH FILM REPRODUCER
Norbert Schlagheck, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 120,078, Feb. 7, 1980, Pat. No. Des. 266,430. This application Jun. 17, 1982, Ser. No. 389,229
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 5MR 570
Term of patent 14 years
U.S. Cl. D16—27



277,289
POWDER CARTRIDGE
Lowell E. Sabin, Spring Lake Park, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jun. 1, 1982, Ser. No. 383,762
Term of patent 14 years
U.S. Cl. D16—32

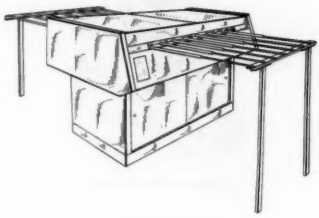


277,290
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Corporation, Norwood, N.J.
Filed Feb. 9, 1983, Ser. No. 465,204
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 13088
Term of patent 14 years
U.S. Cl. D16—117

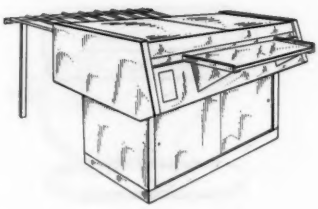
277,291
ELECTRIC GUITAR
Charles E. Deal, 45 Plymouth Ave., Mill Valley, Calif. 94941
Filed Oct. 14, 1982, Ser. No. 434,261
Term of patent 14 years
U.S. Cl. D17—14

277,292
SOLID BODY GUITAR
Eric S. Leifheit, 7541 E. 34th St., Tucson, Ariz. 85711
Filed Sep. 24, 1982, Ser. No. 423,042
Term of patent 14 years
U.S. Cl. D17—19

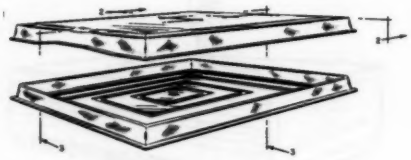
277,293
PRINTING PLATE PROCESSOR (II)
William Bosshardt, Armonk, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.
Filed Apr. 10, 1981, Ser. No. 252,729
Term of patent 14 years
U.S. Cl. D18—13



277,294
PRINTING PLATE PROCESSOR
William Bosshardt, Armonk, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.
Filed Apr. 10, 1981, Ser. No. 252,730
Term of patent 14 years
U.S. Cl. D18—13



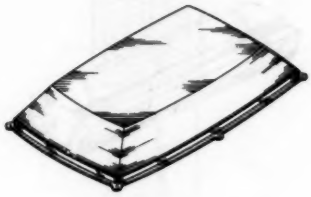
277,295
PALETTE CASE
Jeffery L. Jones, 3341 Towerwood, Ste. 201, Dallas, Tex. 75234
Filed Apr. 16, 1982, Ser. No. 369,175
Term of patent 14 years
U.S. Cl. D19—35



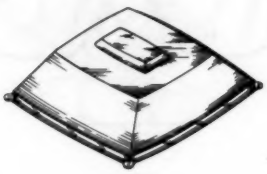
277,296
PEN
Alvin Frazier, 3443 Pleasant View, Cincinnati, Ohio 45207
Division of Ser. No. 148,930, May 12, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,274
Term of patent 14 years
U.S. Cl. D19—42

277,297
CONTAINER FOR DESK TOP MATERIALS OR SIMILAR ARTICLES
Joseph R. Jennings, Studio City, and Michael Minor, Los Angeles, both of Calif., assignors to Paramount Pictures Corporation, New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,984
Term of patent 14 years
U.S. Cl. D19—75

277,298
LIMOUSINE ADVERTISING SIGN
Eugene Nelson, Wynnewood, Pa., assignor to American Mobile Advertising Corp., Bensalem, Pa.
Filed Sep. 28, 1983, Ser. No. 536,543
Term of patent 14 years
U.S. Cl. D20—10

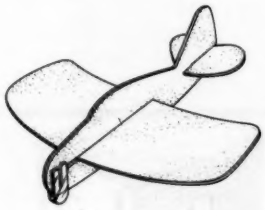


277,299
TAXICAB ADVERTISING SIGN
Eugene Nelson, Wynnewood, Pa., assignor to American Mobile Advertising Corp., Bensalem, Pa.
Filed Sep. 28, 1983, Ser. No. 536,544
Term of patent 14 years
U.S. Cl. D20—10



277,300
COMBINED TOY SANDBOX AND SIFTER
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Jul. 30, 1982, Ser. No. 404,357
Term of patent 14 years
U.S. Cl. D21—59

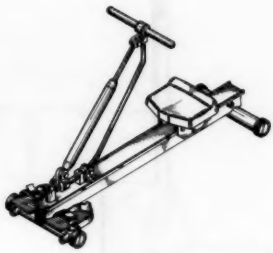
277,301
TOY GLIDER
Mark J. Sampson, Atlanta, Ga., assignor to Paradies Airport Shops, Inc., Atlanta, Ga.
Filed Aug. 6, 1982, Ser. No. 406,005
Term of patent 14 years
U.S. Cl. D21—89



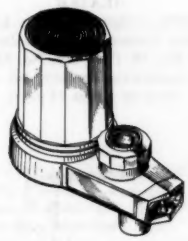
277,302
PLAYHOUSE
Loris Kyle, 697 Arlington Ave., Berkeley, Calif. 94707
Filed Nov. 22, 1982, Ser. No. 443,280
Term of patent 14 years
U.S. Cl. D21—114

277,303
TOY FIGURE
Wesley R. Seeds, San Francisco, Calif., assignor to Lucasfilm, Ltd., San Rafael, Calif.
Filed Sep. 28, 1982, Ser. No. 426,040
Term of patent 14 years
U.S. Cl. D21—148

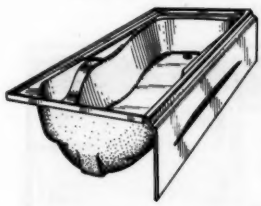
277,304
ROWING MACHINE
David B. Smith, 3811 W. Mercer Way, Mercer Island, Wash. 94040, and John M. Moore, Woodinville, Wash., assignors to David B. Smith, Mercer Island, Wash.
Filed Jul. 19, 1982, Ser. No. 399,358
Term of patent 14 years
U.S. Cl. D21—195



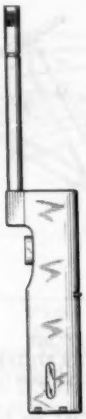
277,305
WATER FILTER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Jul. 15, 1982, Ser. No. 398,641
Term of patent 14 years
U.S. Cl. D23—3



277,306
BATHTUB
Michael S. Lax, New York, N.Y., assignor to Fiat Products, Inc., Monroe, Ohio
Division of Ser. No. 340,642, Jan. 19, 1982,. This application Mar. 26, 1984, Ser. No. 593,293
Term of patent 14 years
U.S. Cl. D23—55

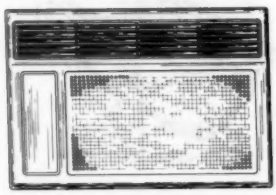


277,307
FIRE LIGHTER
Noel E. Zeller, Milford, Conn., and Bronislaw Zapolski, Princeton, N.J., assignors to Noel E. Zeller, White Plains, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,726
Term of patent 14 years
U.S. Cl. D23—90.1

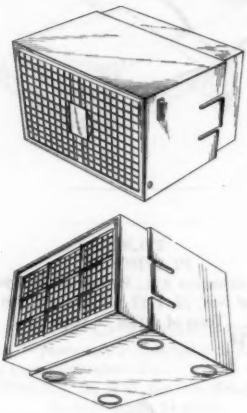


277,308
HEATER
Henri Bastien, Couvin, Belgium, assignor to Société Anonyme Fonderies du Lion, Frasnes les Couvin, Belgium
Filed Jan. 15, 1981, Ser. No. 225,300
Claims priority, application Benelux, Jul. 16, 1980, 54855
Term of patent 14 years
U.S. Cl. D23—97

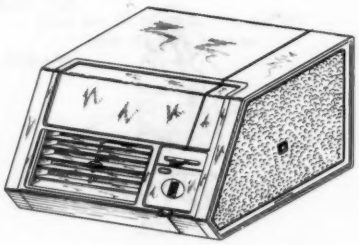
277,309
GRILLE FOR AN AIR CONDITIONING UNIT
Kentaro Yamamoto, Santa Monica, Calif., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 18, 1982, Ser. No. 349,808
Term of patent 14 years
U.S. Cl. D23—141



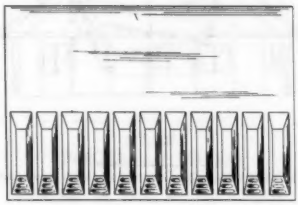
277,310
ELECTROSTATIC FILTER
Bertil Jacobsson, Grävlingsvägen 2, 53100 Lidköping, Sweden
Filed Jun. 11, 1982, Ser. No. 387,475
Claims priority, application Sweden, Dec. 15, 1981, 812958
Term of patent 14 years
U.S. Cl. D23—149



277,311
ROOM AIR CLEANER
Masao Tsuji, Old Lyme, Conn., assignor to North American Philips Corporation, New York, N.Y.
Filed Dec. 6, 1982, Ser. No. 447,072
Term of patent 14 years
U.S. Cl. D23—149

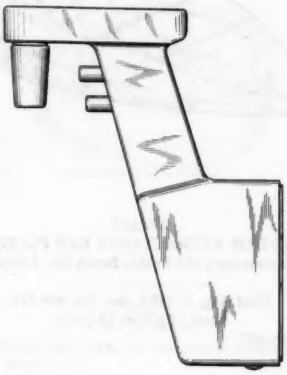


277,312
ROOF EDGE VENTILATOR
Jerry R. Williamson, and Keith A. Muters, both of P.O. Box 159, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 417,448
Term of patent 14 years
U.S. Cl. D23—153

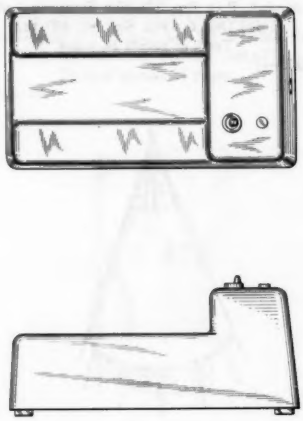


277,313
HAND-HELD PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,114
Term of patent 14 years
U.S. Cl. D24—55

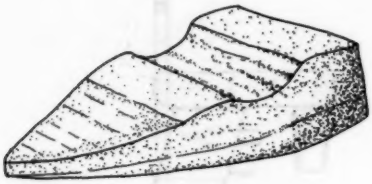
277,314
HAND-HELD PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,115
Term of patent 14 years
U.S. Cl. D24—55



277,315
BASE FOR A PIPETTING DEVICE
Michael A. Alvarez, Haskell, N.J.; George Fried, Tarrytown, and George Payne, Bedford Hills, both of N.Y., assignors to Manostat Corporation, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 430,116
Term of patent 14 years
U.S. Cl. D24—55

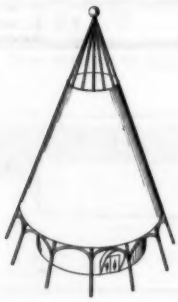


277,316
ORTHOPEDIC DEVICE FOR STABILIZING THE SCROILIAC
Hursbel Meares, 9877 Grand Teton, Baton Rouge, La. 70814
Filed Jun. 16, 1982, Ser. No. 389,018
Term of patent 14 years
U.S. Cl. D24—64

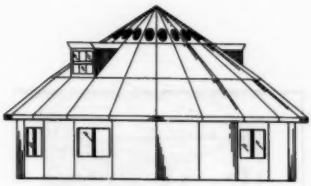


277,317
SET OF RETRACTABLE EAR PLUGS
Daryl L. Eisenmenger, 143 Pebble Beach Dr., Little Rock, Ark. 72212
Filed Aug. 2, 1982, Ser. No. 404,579
Term of patent 14 years
U.S. Cl. D24—67

277,318
THEATRE STRUCTURE
Helen B. English, P.O. Box 571, San Fernando, Calif. 91341
Filed Dec. 6, 1982, Ser. No. 447,182
Term of patent 14 years
U.S. Cl. D25—7



277,319
BUILDING STRUCTURE
Joseph P. Rutherford, 3203 Rocks-Chrome Hill Rd., Jarrettsville, Md. 21084
Continuation-in-part of Ser. No. 154,085, May 28, 1980, abandoned. This application Sep. 1, 1982, Ser. No. 413,782
Term of patent 14 years
U.S. Cl. D25—23



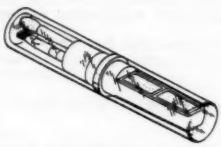
277,320
COMBINED LAMP AND MAGNIFIER LENS
Boynton Selden, West Hartford, Conn., assignor to Michele R., Trustee Selden, West Hartford, Conn.
Filed Jun. 30, 1982, Ser. No. 393,702
Term of patent 14 years
U.S. Cl. D26—51

277,321
HANDLE FOR DISPOSABLE RAZOR BLADE CARTRIDGES
Clifford E. Gant, 3229 E. Monica, Phoenix, Ariz. 85032
Filed Jun. 9, 1982, Ser. No. 386,709
Term of patent 14 years
U.S. Cl. D28—46

277,322
DEVICE FOR REMOVING FINGERNAIL POLISH
Toni A. West, P.O. Box 8400, Coral Springs, Fla. 33065
Filed Jun. 9, 1980, Ser. No. 157,990
Term of patent 14 years
U.S. Cl. D28—58

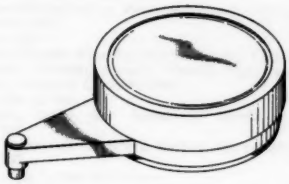
277,323
FINGERNAIL DRYER
Niclas P. Raicevic, 4700 Colfax, North Hollywood, Calif. 91602
Filed Sep. 29, 1982, Ser. No. 427,853
Term of patent 14 years
U.S. Cl. D28—58

277,324
COSMETIC COMPACT
Brian Davey, North Shields, England, assignor to Lion Brush Works Limited, Newcastle-upon-Tyne, England
Division of Ser. No. 389,804, Jun. 18, 1982, Pat. No. 275,133. This application Apr. 12, 1984, Ser. No. 599,383
Claims priority, application United Kingdom, Dec. 21, 1981, 1 004 323; Jan. 13, 1982, 1 004 593
Term of patent 14 years
U.S. Cl. D28—77

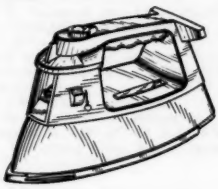


277,325
VACUUM CLEANER
Niklaus Hug, Romanshorn, Switzerland, assignor to Düpro AG, Romanshorn, Switzerland
Filed Apr. 19, 1982, Ser. No. 369,827
Term of patent 14 years
U.S. Cl. D32—22

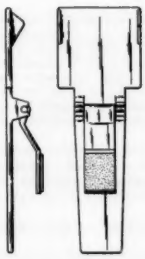
277,326
PHONORECORD CLEANER
Ivor J. Allsop, 2079 N. Shore Rd., Bellingham, Wash. 98225
Continuation-in-part of Ser. No. 311,639, Oct. 15, 1981,. This application Oct. 13, 1982, Ser. No. 434,130
Term of patent 14 years
U.S. Cl. D32—35



277,327
STEAM IRON
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Feb. 1, 1982, Ser. No. 344,845
Term of patent 14 years
U.S. Cl. D32—70



277,328
PIVOTABLE MAILBOX SIGNAL
David A. Hollenbach, 777 Irvin-Shoots Rd., Marion, Ohio 43302
Filed Jun. 15, 1982, Ser. No. 388,671
Term of patent 14 years
U.S. Cl. D99—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See—*
Thim, Stig, 4,495,127, Cl. 264-157.000.

A. H. Robins Company, Incorporated: *See—*
Taylor, Chandler R., Jr., 4,495,183, Cl. 514-220.000.

A/S Alfred Benzon: *See—*
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,495,287, Cl. 435-231.000.

A/S Neselco: *See—*
Soerensen, Gunnar; and Svendsen, Leo G., 4,495,216, Cl. 427-25.000.

A/S Niro Atomizer: *See—*
Jons, Ebbe S.; and Gude, Klaus E., 4,495,162, Cl. 423-171.000.

Abbas, Daniel C.: *See—*
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.

Abbott Laboratories: *See—*
Bertaud, Francois X.; and Siedler, Hans J., 4,494,663, Cl. 215-232.000.
Shaffar, Mark R., 4,495,293, Cl. 436-172.000.

Abdulkhairov, Vakhit T.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, to Sumitomo Chemical Company, Ltd. Process for continuous production of prepreg sheets. 4,495,017, Cl. 156-181.000.

Abe, Yoshinori: *See—*
Matsunawa, Masahiko; and Abe, Yoshinori, 4,495,522, Cl. 358-280.000.

Abel, Hal P., to Hughes Aircraft Company. Solderable plated plastic components and process for plating . 4,495,253, Cl. 428-624.000.

Abel, Heinz; and Guth, Christian, to Ciba-Geigy Corporation. Wetting agents and their use as mercerizing assistants. 4,494,952, Cl. 8-125.000.

Abishev, Dzhantore N.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Ablewhite, John H.: *See—*
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., 4,495,001, Cl. 148-11.50A.

Abrams, Lawrence M., to HRI, Inc. Quenching hydrocarbon effluent from catalytic reactor to avoid precipitation of asphaltene compounds. 4,495,060, Cl. 208-48.00Q.

Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., to United States of America, Air Force. Imaging apparatus for transverse electrode electro-optic tunable filter. 4,494,827, Cl. 350-385.000.

Abrioux, Andre H.; Corcuff, Pierre; and Leveque, Jean L., to L'Oreal. Disconnectible apparatus comprising a double bayonet coupling. 4,494,555, Cl. 128-755.000.

Acampora, Anthony, to AT&T Bell Laboratories. Transmitter and receivers using resource sharing and coding for increased capacity. 4,495,619, Cl. 370-104.000.

Ackert, Gail M.: *See—*
Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., 4,494,939, Cl. 441-70.000.

Acla, Howard L.: *See—*
Ritsko, Joseph E.; and Acla, Howard L., 4,495,158, Cl. 423-65.000.

Acme Resin Corporation: *See—*
Armbruster, David R., 4,495,316, Cl. 523-139.000.

Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, to Daimler-Benz AG. Downdraft carburetor for internal combustion engines. 4,495,115, Cl. 261-44.00F.

Adenau, Marvin L.: *See—*
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,494,658, Cl. 211-49.00R.

Adiletta, Joseph G., to Pall Corporation. Fire resistant thermal insulating structure and garments produced therefrom. 4,495,238, Cl. 428-215.000.

Adkins, Charles H. LP Gas safety valve. 4,494,570, Cl. 137-590.000.

Advanced Micro Devices, Inc.: *See—*
Haskell, Jacob D., 4,495,025, Cl. 156-648.000.

AE PLC: *See—*
Ludovico, Bruni, 4,494,501, Cl. 123-193.0CP.

Agency of Industrial Science and Technology, Ministry of International Trade and Industry: *See—*
Sano, Shiro, 4,495,300, Cl. 501-102.000.

Agfa-Gevaert Aktiengesellscaft: *See—*
Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, 4,495,277, Cl. 430-567.000.

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Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, 4,494,706, Cl. 242-65.000.

Aiba, Takeshi: *See—*
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.

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Ainsworth, Leslie; and Ainsworth, Harold. Eye protector. 4,494,251, Cl. 2-425.000.

Air Conditioning Corporation: *See—*
Lubin, David; Connor, Larry W.; and Glass, Samuel W., 4,495,383, Cl. 179-100.00L.

Aisan Industry Co., Ltd.: *See—*
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.

Aisin Seiki Kabushiki Kaisha: *See—*
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.
Tsubouchi, Kaoru, 4,494,443, Cl. 91-369.00A.

Aisslinger, Dieter E.: *See—*
Pusch, Gunter; Hoffmann, Alexander; and Aisslinger, Dieter E., 4,495,239, Cl. 428-192.000.

Akatsuka, Takao: *See—*
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.

Aklin, George H., deceased; and Aklin, Marie M., Voluntary Administrator. Curved field photographic objective. 4,494,829, Cl. 350-464.000.

Aklin, Marie M., Voluntary Administrator: *See—*
Aklin, George H., deceased; and Aklin, Marie M., Voluntary Administrator, 4,494,829, Cl. 350-464.000.

A.B. Dick Company: *See—*
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.

Albany International Corp.: *See—*
Rudt, Robert J., 4,494,319, Cl. 34-116.000.

Albers, Richard A., to Deft Chemical Coatings, Inc. Warer reducible epoxy coating composition. 4,495,317, Cl. 523-414.000.

Albertsen, Peter S., to Corning Glass Works. Stove with catalytic converter. 4,494,525, Cl. 126-289.000.

Albright & Wilson Limited: *See—*
Cole, Robert; and Stephenson, James E., 4,494,951, Cl. 8-195.000.

Alcan Aluminum Corporation: *See—*
Gailey, J. Lynn, 4,494,346, Cl. 52-489.000.

Alcan International Limited: *See—*
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., 4,495,001, Cl. 148-11.50A.
Gesing, Adam J.; and Dewing, Ernest W., 4,495,047, Cl. 204-245.000.

Alcon Pharmaceuticals, Limited: *See—*
Feurer, Bernard; and Pigot, Gilles, 4,495,117, Cl. 264-1.400.

Alexander, John A.: *See—*
Petrelis, Peter G.; and Alexander, John A., 4,495,498, Cl. 340-825.790.

Alexander, Jose, to Merck & Co., Inc. Prodrugs of Ara-A an antiviral agent. 4,495,180, Cl. 514-46.000.

Alfa Romeo S.p.A.: *See—*
Surace, Filippo; and Garcea, Giampaolo, 4,494,761, Cl. 277-67.000.

Alfred University Research Foundation, Inc.: *See—*
Funk, James E., 4,494,959, Cl. 44-51.000.

Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Device utilized for separation of hydrogen isotopes from a gas mixture for separation of isotopes contained in a hydrogen isotope mixture. 4,494,965, Cl. 55-16.000.

Alipchenko, Elena S.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Allain, Jean L.: *See—*
Segarra, Gerard; and Allain, Jean L., 4,495,493, Cl. 340-825.500.

Allan, Thomas T.: *See—*
Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., 4,494,403, Cl. 73-40.700.

Allcock, Harry R.; Austin, Paul E.; and Neenan, Thomas X., to Research Corporation. Anesthetic polyorganophosphazenes. 4,495,174, Cl. 424-78.000.

Allec, Josiane: *See—*
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,495,203, Cl. 514-732.000.

Allemano, Emilio. Depthometer for underwater diving. 4,494,407, Cl. 73-300.000.

Allied Corporation: *See—*
Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.
Chacko, Varkki P.; and Kraft, Timothy J., 4,495,324, Cl. 524-504.000.
Hensley, Thomas E.; and Weaver, Richard D., 4,494,701, Cl. 239-585.000.
Kavesh, Sheldon; Sellers, Gregory J.; and Witte, Wayne H., 4,495,487, Cl. 340-572.000.
Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.

Allstar Verbrauchsguter GmbH & Co., KG: *See—*
Krusche, Kurt, 4,494,661, Cl. 211-87.000.

Altemose, James L., to Creative Environments, Inc. Hand portable bottle rack. 4,494,788, Cl. 294-161.000.

Alvarez, Guillermo D. Apparatus for processing soil for planting. 4,494,611, Cl. 172-32.000.

AM International, Inc.: *See—*
Bialczak, Edward C.; and Chernovitz, John J., 4,495,269, Cl. 430-150.000.

Amana Refrigeration, Inc.: *See—*
DeHaan, Robert; and Gisvold, Lee D., 4,494,598, Cl. 165-47.000.

Amano, Hisao: *See—*
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, 4,494,371, Cl. 57-263.000.

Amax Inc.: *See—*
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., 4,495,157, Cl. 423-54.000.

AMB Technology, Inc.: *See—*
Kurzinski, Cass R., 4,494,594, Cl. 164-443.000.

Ambike, Suhas: *See—*
Ng, Tai-Wing; Wright, Arthur P. G.; Blaser, Eric; and Ambike, Suhas, 4,495,087, Cl. 252-315.700.

Amco Corporation: *See—*
Bentson, Wade A., 4,494,453, Cl. 99-353.000.

Amemiya, Norio: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Amemiya, Yoichi: *See—*
Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, 4,495,464, Cl. 324-174.000.

Amer, Gamal I.: *See—*
Lawson, Nelson E.; and Amer, Gamal I., 4,495,095, Cl. 260-97.700.

American Can Company: *See—*
Rohowetz, Stanley E., 4,495,156, Cl. 427-384.000.

American Cyanamid Company: *See—*
Giglia, Robert D., 4,495,030, Cl. 162-145.000.
Ley, David A.; and Burkhard, Herbert, 4,495,366, Cl. 564-160.000.

American Home Products Corporation: *See—*
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.

Amirijafari, Bahram; and Nuttall, Herbert E., Jr. Combination thermal and solvent extraction oil recovery process and apparatus. 4,495,057, Cl. 208-11.00R.

AMP Incorporated: *See—*
Cosmo, Nicola, 4,494,807, Cl. 339-17.0CF.

Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., to A.B. Dick Company. Signal generation and synchronizing circuit for a decentralized ring network. 4,495,617, Cl. 370-86.000.

Analogic Corporation: *See—*
Dobbs, John M., 4,495,635, Cl. 378-56.000.

Anbo, Kiyoshi: *See—*
Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, 4,494,490, Cl. 123-41.560.

Anderson, Chester C.: *See—*
Beckstrom, Ronald D.; and Anderson, Chester C., 4,494,682, Cl. 222-551.000.

Anderson, George F.; and Burt, Dan L., to Motorola, Inc. Metallization means and method for high temperature applications. 4,495,222, Cl. 427-89.000.

Anderson, John W., Jr.: *See—*
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.

Anderson, Joseph R., to Werner Lehara, Inc. Positive-displacement volumetric depositor apparatus for baking dough and the like. 4,494,920, Cl. 425-190.000.

Anderson, Laurens; and Nashed, Mina A., to Wisconsin Alumni Research Foundation. Method of preparing a disaccharide. 4,495,346, Cl. 536-18.500.

Anderson, Paul H.: *See—*
Sackis, John J.; and Anderson, Paul H., 4,495,319, Cl. 524-96.000.

Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., to Litton Systems, Inc. Magneto-optic chip with gray-scale capability. 4,495,492, Cl. 340-783.000.

Andre, Paul R.: *See—*
Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,494,775, Cl. 285-26.000.

Andrea, Tariq A.; John, William W.; and Steffens, James J., to Shell Oil Company. Use of certain pyrimido[5,4-e]-1,2,4-triazines for controlling the growth of unwanted plants. 4,494,981, Cl. 71-93.000.

Andreev, Vladimir P.: *See—*
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Andrews, Roland E., to Tektronix, Inc. Waveform acquisition apparatus and method. 4,495,586, Cl. 364-487.000.

Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., to Battelle Development Corporation. Providing patterns. 4,494,865, Cl. 355-32.000.

Anello, Joseph G., to Westinghouse Electric Corp. Three-step treatment of stainless steels having metastable austenitic and martensitic phases to increase resistance to chloride corrosion. 4,495,002, Cl. 148-12.00E.

Angelo Guala, S.p.A.: *See—*
Guala, Piergiacomo, 4,494,664, Cl. 215-252.000.

ANIC S.p.A.: *See—*
Neri, Carlo; and Buonomo, Franco, 4,495,371, Cl. 568-427.000.

Ansite, William K., to Figgie International Inc. Mask assembly. 4,494,538, Cl. 128-205.250.

Anthony, Blair T., to General Electric Company. Ultraviolet light absorbing agents, method for making, compositions and articles containing same. 4,495,360, Cl. 556-436.000.

Aoki, Haruo; and Terahata, Masahiro, to Fuji Photo Film Co., Ltd. System for controlling the activity of developing solutions and apparatus for processing photosensitive materials. 4,494,845, Cl. 354-297.000.

Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, to Canon Kabushiki Kaisha. Electrophotographic method and apparatus for providing accurate half-tone images. 4,494,856, Cl. 355-3.00R.

Aoki, Tetsuo: *See—*
Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, 4,495,621, Cl. 371-6.000.

Aoki, Tsuyoshi: *See—*
Sugihara, Taizo; and Aoki, Tsuyoshi, 4,495,133, Cl. 264-504.000.

Apple Computer, Inc.: *See—*
Oyama, Terrell A., 4,494,814, Cl. 339-112.00R.

Arai, Yoshihiro; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,495,242, Cl. 428-336.000.

Arakawa, Hideo: *See—*
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.

Araki, Kazumi; and Kuga, Tetsuro, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-histidine by fermentation. 4,495,283, Cl. 435-107.000.

Araki, Shigeyuki, to Ricoh Company, Ltd. Multi-phase stepping motor controller. 4,495,455, Cl. 318-696.000.

Araki, Yoshiharu: *See—*
Ishii, Kinichi; and Araki, Yoshiharu, 4,494,336, Cl. 49-352.000.

Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., to Raytheon Company. Radio frequency antenna having a reflector with an edge in a pattern null region to reduce edge scattering. 4,495,504, Cl. 343-779.000.

Archibald, G. Kent, to Medical Plastics, Inc. Electrosurgery safety monitor. 4,494,541, Cl. 123-303.130.

Arent, Randy L. Portable work station. 4,494,627, Cl. 182-129.000.

Arlt, Dieter: *See—*
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,495,370, Cl. 568-322.000.

Armbruster, David R., to Acme Resin Corporation. Acid-curable fluoride-containing no-bake foundry resins. 4,495,316, Cl. 523-139.000.

Armco Inc.: *See—*
Schumacher, William J.; and Tanczyn, Harry, 4,494,988, Cl. 75-128.00A.

Armour Pharmaceutical Company: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,495,097, Cl. 260-112.50T.

Arnold, Mary T., to Atlantic Richfield Company. Polyimide and/or polyamide-imide compositions in mixed solvents. 4,495,321, Cl. 524-104.000.

Arnold, Nancy L., to Procter & Gamble Company, The. Animal litter composition. 4,494,482, Cl. 119-1.000.

Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., to International Telephone and Telegraph Corporation. Circuit for interfacing a processor to a line circuit. 4,495,614, Cl. 370-58.000.

Arru, Pietro: *See—*
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.

Asagi, Kousaku: *See—*
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.

Asahi Glass Company Ltd.: *See—*
Yamabe, Masaaki; and Munekata, Seiji, 4,495,364, Cl. 560-180.000.

ASEA Aktiebolag: *See—*
Immonen, Kari, 4,494,306, Cl. 29-809.000.
Larsson, Sten, 4,494,297, Cl. 29-527.600.

Ash Grove Cement Company: *See*—
Harris, Harry A., 4,494,990, Cl. 106-90.000.
Ashe, Bonnie M.: *See*—
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.
Ashland Oil, Inc.: *See*—
Corn, John E., 4,495,110, Cl. 260-544.00A.
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.
Ast, Dale A., to Harper, Truck, Inc. Combination stepladder and hand truck apparatus. 4,494,626, Cl. 182-20.000.
Astech, Inc.: *See*—
Brown, William M.; and Dunn, Robert T., 4,495,386, Cl. 179-2.510.
Astra Lakemedel Aktieboiag: *See*—
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
AT&T Bell Laboratories: *See*—
Acampora, Anthony, 4,495,619, Cl. 370-104.000.
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,494,303, Cl. 29-576.00W.
Dwarakanath, Mirmira R., 4,495,472, Cl. 330-277.000.
Giger, Adolf J., 4,495,648, Cl. 455-73.000.
Pamiello, Gani, 4,495,515, Cl. 357-81.000.
Steele, Raymond; Wong, Wai C.; and Xydeas, Costas S., 4,495,620, Cl. 370-118.000.
Tamburro, Peter J., 4,494,816, Cl. 339-177.00R.
Thompson, Dennis J., 4,495,565, Cl. 364-200.000.
AT&T Technologies, Inc.: *See*—
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.
Draper, Clifton W.; and Poate, John M., 4,495,255, Cl. 428-669.000.
Fegley, Charles R.; and Regneth, Lorenz, 4,495,396, Cl. 219-85.00G.
Viriyayuthakorn, Montri; and DeBoo, Robert V., 4,495,022, Cl. 156-500.000.
Zado, Frank M., 4,495,007, Cl. 148-23.000.
Atasi Corporation: *See*—
Chambers, Aaron L., 4,495,533, Cl. 360-72.200.
Ateliers des Charmilles S.A.: *See*—
Janicke, Johan, 4,495,393, Cl. 219-69.00M.
Atlantic Richfield Company: *See*—
Arnold, Mary T., 4,495,321, Cl. 524-104.000.
Jones, C. A.; and Sofranko, John A., 4,495,374, Cl. 585-500.000.
Miller, Richard F., 4,495,105, Cl. 260-414.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,304, Cl. 502-66.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,305, Cl. 502-65.000.
Atlas Copco Aktiebolag: *See*—
Eklof, Ake T., 4,494,614, Cl. 173-116.000.
Ato Chimie: *See*—
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,495,111, Cl. 260-932.000.
Attila, Toth. Directly-heated electrical resistance unsoldering tip for simultaneous liquefying and removing solder from a joint. 4,495,403, Cl. 219-233.000.
Atwood, Warren C.: *See*—
Wolf, Stanley; and Atwood, Warren C., 4,495,220, Cl. 427-82.000.
August Bilstein GmbH & Co. KG: *See*—
de Baan, Johannes J.; and Honig, Michael, 4,494,632, Cl. 188-269.000.
Augustin, Ulrich, to Daimler-Benz Aktiengesellschaft. Hydraulic adjusting device for controlling the beginning of injection of an injection pump. 4,494,514, Cl. 123-504.000.
Aurora Industries, Inc.: *See*—
Smillie, John G., 4,494,318, Cl. 34-112.000.
Austin, Paul E.: *See*—
Allcock, Harry R.; Austin, Paul E.; and Neenan, Thomas X., 4,495,174, Cl. 424-78.000.
Autoipari Kutato Intezet: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.
Automatismes Et Techniques Advancees: *See*—
Loustau, Desire, 4,494,580, Cl. 140-1.000.
Autry, Larry W.: *See*—
Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., 4,495,328, Cl. 524-606.000.
Avco Corporation: *See*—
Laskaris, A. Theodore; and Roy, Paul J., 4,495,231, Cl. 428-36.000.
Aves, Gary A.: *See*—
Aves, William L., Jr.; and Aves, Gary A., 4,495,006, Cl. 148-16.500.
Aves, William L., Jr., to Dresser Industries, Inc. Carbosiliconizing ferrous substrates. 4,495,005, Cl. 148-16.500.
Aves, William L., Jr.; and Aves, Gary A., to Dresser Industries, Inc. Borocarburizing ferrous substrates. 4,495,006, Cl. 148-16.500.
Avril, Pierre, to Jeumont-Schneider. Protective cover for an exhaust fan motor. 4,494,450, Cl. 98-42.020.
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, to Hitachi, Ltd. Process for forming thin film. 4,495,218, Cl. 427-53.100.
Azuma, Saburo: *See*—
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.
B. F. Goodrich Company, The: *See*—
Chasar, Dwight W., 4,495,320, Cl. 524-101.000.
Weisend, Norbert A., Jr., 4,494,715, Cl. 244-134.00A.
B.H.F. (Engineering) Ltd.: *See*—
Vilk, Peter; and Stephens, Alan, 4,494,974, Cl. 65-337.000.
Babcock-BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG: *See*—
Roos, Friedrich; and Bahner, Friedrich, 4,494,315, Cl. 34-48.000.
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, to Robert Bosch GmbH. Electrically controllable valve. 4,494,727, Cl. 251-64.000.
Bach, Lloyd G.: *See*—
Kytta, Oswald O.; and Bach, Lloyd G., 4,494,378, Cl. 60-547.100.
Bachle, Wilfred H., to Ford Motor Company. Fluid actuated thermal compensator with adjustable stroke characteristics. 4,494,693, Cl. 236-100.000.
Backlund, Peter S., to Union Oil Company of California. Fertilizers containing nitrogen and micronutrients. 4,494,976, Cl. 71-28.000.
Badiali, Roberto, to Officine Savio S.p.A. Splicer device to disassemble and recompose yarn mechanically. 4,494,367, Cl. 57-22.000.
Badicel, Evelyn; and Porko, Gunnar O. Method of supplying concrete. 4,494,903, Cl. 414-376.000.
Bahner, Friedrich: *See*—
Roos, Friedrich; and Bahner, Friedrich, 4,494,315, Cl. 34-48.000.
Baika, Toyokazu: *See*—
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.
Nakamura, Norihiko; and Baika, Toyokazu, 4,494,496, Cl. 123-90.150.
Bailey, Clarence W. Side-dumping, material-hauling conveyance. 4,494,798, Cl. 298-17.600.
Bairakovsky, Gennady M.: *See*—
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, to Hitachi, Ltd. Photosensor with diode array. 4,495,409, Cl. 250-211.00J.
Baker Oil Tools, Inc.: *See*—
Beimgraben, Herbert W., 4,495,073, Cl. 210-448.000.
Baley, William D., to Lehigh Press, Inc., The. Sheet folding apparatus and method. 4,494,949, Cl. 493-432.000.
Balk, Albertus C.: *See*—
Duyker, Christiaan J. H.; and Balk, Albertus C., 4,494,684, Cl. 224-39.000.
Ballegeer, Jean C.; and Nguyen, Duyet H., to Thomson-CSF. Method and device for transmission of digital data. 4,495,573, Cl. 364-200.000.
Baltynova, Nazymkul: *See*—
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit ⁇., 4,494,930, Cl. 432-95.000.
Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Diamondlike flakes. 4,495,044, Cl. 204-192.00C.
Banning, Harmon W.: *See*—
Patukonis, Robert J.; and Banning, Harmon W., 4,495,556, Cl. 363-59.000.
Baranoff-Rossine, Dimitri, to Societe Scome-France. Method and apparatus for identifying sound recordings. 4,495,526, Cl. 360-15.000.
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, to Soyez FR. S.A. Packaging of drinking straws. 4,494,361, Cl. 53-553.000.
Barger, Dwight F.: *See*—
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.
Barley, Geoffrey W., to UOP Inc. Vehicle seats. 4,494,794, Cl. 297-307.000.
Barnard, Maxwell K. Inertial energy interchange system with energy makeup by combustion engine on demand. 4,495,451, Cl. 318-150.000.
Barnert, Eike; and Schmitz, Heinz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Fluidized bed furnace and method of emptying the same. 4,495,215, Cl. 427-6.000.
Barnes, Marvin: *See*—
Hickling, Colin D.; and Barnes, Marvin, 4,495,481, Cl. 337-349.000.
Barone, Sam A. Removable freeze plug. 4,494,670, Cl. 220-235.000.
Barr & Stroud Limited: *See*—
Lidwell, Michael O., 4,494,819, Cl. 350-1.400.
Barrera, Ralph E.: *See*—
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.
Barrett, Ronald A., to Tektronix, Inc. Buffer amplifier. 4,495,471, Cl. 330-151.000.
Barrie, Andrew; and Freedman, Phillip A., to V.G. Isogas Limited. Automatic mass spectrometer inlet system. 4,495,414, Cl. 250-288.000.
Bartelme, Michael J., III: *See*—
Ciuba, Stanley J.; and Bartelme, Michael J., III, 4,495,225, Cl. 427-236.000.
Barth, Peter, to Lohmann GmbH & Co. KG. Process for the removal of impurities from a gas stream containing solvent vapors. 4,494,967, Cl. 55-74.000.
Barthel, Jan; and Bublitz, Hermann R., to International Business Machines Corporation. Microprocessor-controlled adapter circuit for real-time controls, in particular for print hammer controls. 4,495,597, Cl. 364-900.000.
Bartneck, Hans. Molded shoe. 4,494,266, Cl. 12-142.0RS.
Barzso, Craig. Wine aerator. 4,494,452, Cl. 99-323.100.
BASF Aktiengesellschaft: *See*—
Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, 4,494,983, Cl. 71-118.000.

Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.
BASF Farben & Fasern AG: *See*—
Geist, Michael; and Diefenbach, Horst, 4,495,335, Cl. 525-438.000.
BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,495,168, Cl. 424-45.000.
Schmolka, Irving R., 4,495,169, Cl. 424-47.000.
Bassetti, Piero, to Bassetti, S.p.A. Removable cover adapted to cover three-dimensional articles. 4,495,233, Cl. 428-81.000.
Bassetti, S.p.A.: *See*—
Bassetti, Piero, 4,495,233, Cl. 428-81.000.
Bateman, Charles D., to Sundstrand Corporation. Ground proximity warning system with time based mode switching. 4,495,483, Cl. 340-970.000.
Bates, Darrell R. Chain-powered pipe tong device. 4,494,424, Cl. 81-57.180.
Battelle Development Corporation: *See*—
Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., 4,494,865, Cl. 355-32.000.
Battelle-Institut e.V.: *See*—
Rickus, Edmund; and Jager, Karlheinz, 4,495,375, Cl. 136-255.000.
Battelle Memorial Institute: *See*—
Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., 4,495,297, Cl. 501-12.000.
Batty, John R., Jr.: *See*—
Slocum, Chester D.; and Batty, John R., Jr., 4,494,545, Cl. 128-419.00P.
Bauche, Heinrich: *See*—
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., to Khimiko-Metallurgicheskiy Institut. Shaft furnace for heat treatment of finely dispersed materials. 4,494,930, Cl. 432-95.000.
Bausch & Lomb Incorporated: *See*—
Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, to Irion & Vosseler GmbH & Co. & Zahlerfabrik. Stamping foils and methods. 4,495,232, Cl. 428-41.000.
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Rohrbach, Hans-Joerg, 4,494,928, Cl. 432-13.000.
Bautista, John; and Miller, Lawrence H., to Ideal School Supply Corporation. Paper guide for paper cutter. 4,494,430, Cl. 83-468.000.
Baxter Travenol Laboratories, Inc.: *See*—
Thomas, William R., 4,495,278, Cl. 435-5.000.
White, Leonard A., 4,495,135, Cl. 264-553.000.
Bayer Aktiengesellschaft: *See*—
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,495,370, Cl. 568-322.000.
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.
Muschelknautz, Edgar; and Rink, Norbert, 4,494,970, Cl. 65-9.000.
Schroder, Rolf; and Lurssen, Klaus, 4,494,982, Cl. 71-97.000.
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.
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Seidl, Jiri, 4,494,489, Cl. 123-41.310.
Baylor University: *See*—
Busch, Kenneth W., 4,494,872, Cl. 356-328.000.
Beach, Douglas J.: *See*—
Klein, Elias; and Beach, Douglas J., 4,495,067, Cl. 210-87.000.
Bear Medical Systems, Inc.: *See*—
Chaoui, Samir M., 4,494,252, Cl. 3-1.300.
Beaufort, Ronald E., to Varco International, Inc. Fluid actuated jack mechanism. 4,494,376, Cl. 60-421.000.
Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, to Agfa-Gevaert Aktiengesellschaft. Apparatus for convoluting strips of photosensitive material or the like. 4,494,706, Cl. 242-65.000.
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., to Eli Lilly and Company. Xanthine oxidase inhibiting 3(5)-phenyl-substituted-5(3)-pyrazole-carboxylic acid derivatives, compositions, and methods of use. 4,495,195, Cl. 514-406.000.
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Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, 4,494,727, Cl. 251-64.000.
Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, to Agfa-Gevaert Aktiengesellscaft. Photographic silver halide emulsion. 4,495,277, Cl. 430-567.000.
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Cook, William E.; Vodian, Morton A.; and Haunold, Otto, 4,495,150, Cl. 422-99.000.
Beckstrom, Ronald D.; and Anderson, Chester C., to Hunt-Wesson Foods, Inc. Pouring fitment with container and closure therefor. 4,494,682, Cl. 222-551.000.
Becton, Dickinson & Co.: *See*—
Youngman, George, 4,494,399, Cl. 73-1.00G.
Behers, Robert G.: *See*—
Divers, Edward F.; Lascola, John C.; and Behers, Robert G., 4,494,894, Cl. 405-290.000.
Beimgraben, Herbert W., to Baker Oil Tools, Inc. Retrievable screen device for drill pipe and the like. 4,495,073, Cl. 210-448.000.
Bekyarov, Georgi L.: *See*—
Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., 4,494,871, Cl. 356-315.000.
Belferman, Leonid M.: *See*—
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Belin, Claude: *See*—
Le Mehaute , Alain; and Belin, Claude, 4,495,258, Cl. 429-103.000.
Bell, Harry. Manually operable post driver. 4,494,612, Cl. 173-1.000.
Bell & Howell Company: *See*—
Guenther, Kenneth L.; and Zemke, Edward H., 4,494,742, Cl. 270-58.000.
Toeppen, John S., 4,494,840, Cl. 353-101.000.
Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Solid proton conductors and their use. 4,495,078, Cl. 252-62.200.
Bell, Stanley C.: *See*—
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.
Bell Telephone Laboratories, Incorporated: *See*—
McCune, Robert F., 4,495,494, Cl. 340-825.060.
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., to International Harvester Co. Multi-directional single lever control for transmissions. 4,494,418, Cl. 74-475.000.
Beltek Corporation: *See*—
Nishida, Katsumi, 4,495,607, Cl. 369-6.000.
Belyaev, Sergei V.: *See*—
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.
Bendix Corporation, The: *See*—
Kytta, Oswald O.; and Bach, Lloyd G., 4,494,378, Cl. 60-547.100.
Schildkraut, Alan L., 4,494,810, Cl. 339-89.00M.
Schneider, Michael J., 4,494,696, Cl. 239-90.000.
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., to Alcan International Limited. Production of age hardenable aluminum extruded sections. 4,495,001, Cl. 148-11.50A.
Benslay, Roger M.: *See*—
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,495,063, Cl. 208-113.000.
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., to General Electric Company. Testable optically isolated control circuit. 4,495,655, Cl. 455-603.000.
Bentson, Wade A., to Amco Corporation. Tortilla basket fryer. 4,494,453, Cl. 99-353.000.
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Schafer, Paul; and Berendt, Hans-Ulrich, 4,494,956, Cl. 8-543.000.
Berenger, Daniel, to Gerland S.A. Method of and apparatus for producing decorative floor and wall coverings. 4,495,012, Cl. 156-78.000.
Bergh, Daniel D.: *See*—
Timoshenko, John A.; and Bergh, Daniel D., 4,495,381, Cl. 174-178.000.
Bergman, Nils-Ake: *See*—
Widell, Harald; Widell, Jan; and Bergman, Nils-Ake, 4,494,808, Cl. 339-21.00R.
Bergmann, Kurt W.; and Westerhuis, Popko J., to Feldmuhle Aktiengesellschaft. Process for the preparation of coated paper and cardboard and coating materials for the performance of the process. 4,495,029, Cl. 162-135.000.
Berman, Daniel. Apparatus and technique for combustion of methanol or similar fuels. 4,494,467, Cl. 110-234.000.
Bernal, Ronald D.: *See*—
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.
Bernays, David J., Jr., to Charles Stark Draper Laboratory, Inc., The. Resettable feedback sensor. 4,495,460, Cl. 324-77.00A.
Bernhard, Horst; and Esselborn, Reiner, to Merck Patent Gesellschaft mit beschrankter Haftung. Nacreous pigments, their preparation and use. 4,494,993, Cl. 106-291.000.
Berry, James A.; and Sherman, Morton, to Celotex Corporation, The. Structure for retrofitting corrugated building exteriors. 4,494,343, Cl. 52-309.110.
Berry, Larry R.; and Richert, Anton S., to Sun Studs, Inc. Veneer lathe. 4,494,588, Cl. 144-209.00R.
Bertaud, Francois X.; and Siedler, Hans J., to Abbott Laboratories. Sterile solution container. 4,494,663, Cl. 215-232.000.
Berte, Francois, to Societe Anonyme des Etablissements Jouvenel et Cordier. Electrovalve. 4,494,573, Cl. 137-625.500.
Bertelsen, Corey A.: *See*—
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., 4,495,058, Cl. 208-11.00R.
Berthollet, Pierre, to Societe A.C.B. Shrub-lifting machine with piston controlled anchor. 4,494,325, Cl. 37-2.00R.
Berthou, Jan-Olov K.: *See*—
Ohlsson, Stig L.; and Berthou, Jan-Olov K., 4,494,964, Cl. 51-296.000.
Berweger, Manfred. Multi-component delivery apparatus. 4,494,676, Cl. 222-63.000.
Bethlehem Steel Corporation: *See*—
Plante, Arcade J.; and Wetzel, Richard F., 4,495,587, Cl. 364-507.000.

Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, to Ste Look. Ski-binding toe abutment member for a ski boot having a truncated sole. 4,494,769, Cl. 280-630.000.

Beymer, Glen E.: *See*—
Washburn, Philip J., 4,494,805, Cl. 312-215.000.

Beyts, Pamela K.; and Latymer, Zdenek, to Tate & Lyle Public Limited Company. Sweetening agents containing chlorodeoxysugar. 4,495,170, Cl. 424-48.000.

Bhagavatula, Venkata A.; and Keck, Donald B., to Corning Glass Works. Method of forming laminated single polarization fiber. 4,494,968, Cl. 65-3.120.

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Biagi, Gino; and Fini, Vincenzo, to Firbimatic S.R.L. Accessory device for removing solvent vapor in machines for dry cleaning garments and the like. 4,494,317, Cl. 34-73.000.

Bialczak, Edward C.; and Chernovitz, John J., to AM International, Inc. Waterborne two component diazo type coating composition with hydrolyzed polyvinyl acetate and hexamethoxy methylmelamine resin. 4,495,269, Cl. 430-150.000.

Bibia Rubber B.V.: *See*—
Duyker, Christiaan J. H.; and Balk, Albertus C., 4,494,684, Cl. 224-39.000.

BICC Public Limited Company: *See*—
Harvey, Peter, 4,494,822, Cl. 350-96.210.

Bicer, Demetrio. Cardiovascular valve prosthesis. 4,494,253, Cl. 3-1.500.

Biedermann, Siegfried M.: *See*—
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.

Bijur Lubricating Corp.: *See*—
Keller, Philip J., 4,494,913, Cl. 417-349.000.

Bilan, Inc.: *See*—
Cross, Ronald H., 4,494,380, Cl. 62-3.000.

Billeter, Henry R., to Sloan Valve Company. Combination air cylinder and hydraulic slack adjuster. 4,494,631, Cl. 188-153.00R.

Biomeasure, Inc.: *See*—
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,495,193, Cl. 514-385.000.

Biosound, Inc.: *See*—
Buon, Georges; and Fidel, Howard, 4,494,548, Cl. 128-660.000.

Bitterli, Peter; and Kaul, Bansi L., to Sandoz Ltd. Mass dyeing of polyester with pyrrocoline dye of his thermal stability. 4,494,955, Cl. 8-512.000.

Black, Kenneth G.; and McElhenny, Stuart W., to General Electric Company. Electric propulsion system for traction vehicles with automatic retard speed regulation. 4,495,449, Cl. 318-60.000.

Blaimschein, Gottfried, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Method and machine tool for a circular machining of eccentric shaft portions. 4,494,280, Cl. 29-6.000.

Blair, Robert E.; and Peede, Michael R., to Georgia-Pacific Resins, Inc. Phenolic resin compounds. 4,495,329, Cl. 524-774.000.

Blair, Timothy T.: *See*—
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,494,858, Cl. 355-3.0TR.

Blakeway, Richard S.: *See*—
Olds, Peter J.; and Blakeway, Richard S., 4,494,260, Cl. 5-446.000.

Blanc, Maurice: *See*—
Green, David; and Blanc, Maurice, 4,495,210, Cl. 426-422.000.

Blank, Heinz U.: *See*—
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Blaser, Eric: *See*—
Ng, Tai-Wing; Wright, Arthur P. G.; Blaser, Eric; and Ambike, Suhas, 4,495,087, Cl. 252-315.700.

Blazek, Vladimir; and Wienert, Volker. Measuring apparatus for the non-invasive detection of venous and arterial blood flow and drainage disorders. 4,494,550, Cl. 128-664.000.

Blevins, Theodore J.; and Swiderski, Paul R., to Hoover Universal, Inc. Sofa bed mechanism. 4,494,258, Cl. 5-29.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Curable masses producing carboxyfunctional silicone coatings. 4,495,340, Cl. 528-15.000.

Blum, Rainer: *See*—
Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.

Bobst S.A.: *See*—
Schoch, Gregor, 4,494,455, Cl. 101-3.00R.

BOC Group plc, The: *See*—
Umeki, Masakazu, 4,494,966, Cl. 55-26.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Processes for preparing methyl substituted-2-oxohexane mixtures. 4,495,091, Cl. 252-522.00R.

Boden, Richard M., to International Flavors & Fragrances Inc. Prins reaction products of diisoamylene, derivatives thereof, organoleptic uses thereof and processes for preparing same. 4,495,359, Cl. 549-356.000.

Body Sonic Kabushiki Kaisha: *See*—
Yamada, Kyota; and Komatsu, Akira, 4,495,638, Cl. 381-27.000.

Boegh-Peterson, Allan. Windshield wiper control having a sensor and a repeatedly renewed offset signal. 4,495,452, Cl. 318-444.000.

Boeing Company, The: *See*—
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.

Bogan, Leonard E.: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Bogner, Evelyn J.: *See*—
Nelson, Ralph E.; Nelson, Ann L.; Bogner, Evelyn J.; and Bogner, Paul M., 4,494,652, Cl. 206-366.000.

Bogner, Paul M.: *See*—
Nelson, Ralph E.; Nelson, Ann L.; Bogner, Evelyn J.; and Bogner, Paul M., 4,494,652, Cl. 206-366.000.

Bohner, Beat: *See*—
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,495,350, Cl. 544-167.000.

Bok, Edward. Method for deposition of fluid and gaseous media on substrates for their transport. 4,495,024, Cl. 156-646.000.

Bolch, Thomas: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Bolton, John D. Wire brush battery connector. 4,494,812, Cl. 339-95.00B.

Bommarito, Paul F. Pupil location gauge. 4,494,837, Cl. 351-204.000.

Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., to Institut Organicheskoi Khimii Imeni N.D. Zelinskogo; Vsesojuzny Kardiolgichesky Anuchny Tsentr; and Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR. Pharmaceutical composition and method for treating heart diseases therewith. 4,495,201, Cl. 514-560.000.

Bonner, Cletus D., to Strayer Coin Bag Co. Inc. Mailing bag with address mounting pocket and tamper proof tie securing means attachable to card and slide zipper preventing surreptitious access thereinto. 4,494,592, Cl. 383-5.000.

Borsh, Richard J.: *See*—
Neff, Steven W.; and Borsh, Richard J., 4,494,779, Cl. 285-159.000.

Bosen, Robert J., to Zeda Computers International Limited. Computer intercommunication system. 4,495,572, Cl. 364-200.000.

Boston, Ernest B., to Phillips Petroleum Company. Metal passivation additive employed in a cracking process. 4,495,064, Cl. 208-120.000.

Boswell, George A., Jr., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-α-polyfluoroalkyl-1H-pyrrole-2-methanols and method for use thereof. 4,495,196, Cl. 514-427.000.

Bott, Lonnie C.: *See*—
Remington, Richard C.; and Bott, Lonnie C., 4,495,540, Cl. 361-172.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Method of manufacturing electric cable having compressed mineral insulation and a titanium sheath. 4,494,307, Cl. 29-825.000.

Boutrois, Guy, to Thomson-CSF. Line-by-line document scanner equipped with a device for controlling the position of documents. 4,494,691, Cl. 235-470.000.

Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., to Flanders Filters, Inc. Filter testing apparatus and method. 4,494,403, Cl. 73-40.700.

Bowers, John E.: *See*—
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.

BP Chimie Societe Anonyme: *See*—
Raufast, Charles, 4,495,337, Cl. 526-88.000.

Bradberry, Laylon E.: *See*—
Lau, Wing-Yan T.; and Bradberry, Laylon E., 4,494,388, Cl. 66-178.00A.

Braden, Rudolf: *See*—
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Bradley, John J.: *See*—
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

Bradshaw, Cyril E.: *See*—
Kelly, William W.; and Bradshaw, Cyril E., 4,494,510, Cl. 123-568.000.

Bradshaw, Norman F., to Haden Schweitzer Corporation. Method and apparatus for conditioning air temperature and humidity. 4,494,596, Cl. 165-20.000.

Bralorne Resources Limited: *See*—
Johnson, Clarence W., 4,494,778, Cl. 285-146.000.

Brander, Rita W.; and Raap, Teresa A., to General Foods Corporation. Meat analog product. 4,495,205, Cl. 426-104.000.

Bredow, Walter; and Otto, Gerhard, to C. Behrens AG. Machine for working flat workpieces by cutting. 4,495,398, Cl. 219-121.0LG.

Breedveld, Cornelis A.; and de Haan, Frans W., to Fokker B.V. Wing flap assembly and aircraft provided therewith. 4,494,716, Cl. 244-213.000.

Breidenbach, Dieter; Mosebach, Wilhelm; and Dellmann, Winfried, to Carl Still GmbH & Co. KG, Firma. Treatment of gas condensates. 4,495,031, Cl. 201-28.000.

Bremson Data Systems, Inc.: *See*—
Van Wandelen, Henri, 4,494,876, Cl. 356-404.000.

Brettbacher, Franz; and Rudolf, Buchegger, to Voest-Alpine Aktiengesellschaft. Hot-rolling plant. 4,494,395, Cl. 72-203.000.

Brezinski, Donald P., to Corning Glass Works. Replaceable junctions for reference electrodes. 4,495,052, Cl. 204-435.000.

Briggs, Michael L.: *See*—
Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.

Briscoe, Peter F.: *See*—
Franklin, Robert W.; and Briscoe, Peter F., 4,494,299, Cl. 29-570.000.

Bristol, Lloyd R., to Tektronix, Inc. Offset balancing method and apparatus for a DC amplifier. 4,495,470, Cl. 330-9.000.

British Aerospace Public Limited Company: *See*—
Grainge, Richard W.; and Slow, Dennis, 4,494,830, Cl. 350-486.000.

British Petroleum Company Limited, The: *See*—
Budahn, Peter; and Ehlers, Jorn, 4,495,306, Cl. 502-185.000.

Britton, Frederick G.; and Clark, Thomas A., to Oil States Industries, Inc. Shock-absorbing joint and assembly with rotating arms and elastomeric spring action. 4,494,738, Cl. 267-140.000.

Broadbent, Eliot K., to Signetics Corporation. Variable rate semiconductor deposition process. 4,495,221, Cl. 427-88.000.

Brocklebank, Norman; and Deighton, Kenneth A., to Priestman Brothers Limited. Earthmoving machine. 4,494,906, Cl. 414-719.000.

Broere, Anton M. P.: *See*—
Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., 4,494,413, Cl. 73-863.430.

Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., to Imperial Chemical Industries, PLC. 1,2,4-Triazin-3(2H) ones. 4,495,185, Cl. 514-242.000.

Brown, Glenn E.: *See*—
Karpetsky, Timothy P.; and Brown, Glenn E., 4,495,279, Cl. 435-6.000.

Brown, M. Wayne, to IPT Corporation. Method for mixing gaseous fuel with air. 4,494,515, Cl. 123-527.000.

Brown, Richard A.; and Trew, John D., to Porter-Walker, Inc.; and Urethane Specialties, Inc., a part interest. Polyurethane spray nozzle for abrasive slurries. 4,494,698, Cl. 239-489.000.

Brown, Roger J.: *See*—
Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., 4,494,939, Cl. 441-70.000.

Brown, Royden. Pollen trap for beehives with bee flight control. 4,494,263, Cl. 6-4.00R.

Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, to General Electric Company. Lighting unit with improved control sequence. 4,495,446, Cl. 315-206.000.

Brown, William M.; and Dunn, Robert T., to Astech, Inc. Telephone extension system utilizing power line carrier signals. 4,495,386, Cl. 179-2.510.

Brown & Williamson Tobacco Corporation: *See*—
Wu, Dan T.; and Korte, Kevin R., 4,494,556, Cl. 131-302.000.

Brownbill, Thomas D., to Metal Box p.l.c. Mounting plastics members in openings in sheet metal members. 4,494,898, Cl. 413-14.000.

Bruce, George T. Apparatus and method for press forming. 4,494,393, Cl. 72-57.000.

Brueckner, Dietrich, to Ernst Leitz Wetzlar GmbH. Automatic focusing device for slide projectors. 4,494,839, Cl. 353-101.000.

Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, to Institut National de la Recherche Agronomique. Phosphopeptides from casein-based material. 4,495,176, Cl. 424-128.000.

Bruney, Paul F., to Sci-Coustics, Inc. Apparatus and method for enhanced psychoacoustic imagery using asymmetric cross-channel feed. 4,495,637, Cl. 381-1.000.

Brunin, Armand; and D'Hervilly, Guy, to International Business Machines Corporation. Method and network for improving transmission of data signals between integrated circuit chips. 4,495,626, Cl. 375-19.000.

Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,494,803, Cl. 308-3.800.

Bruno, Roberto; and Memmi, Massimo, to Zincroksid S.p.A. Process of making long-life thin metal plate for automobile bodies, and thin plate made thereby. 4,495,008, Cl. 148-31.500.

Bruseghini, Leonida: *See*—
Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P., 4,495,199, Cl. 514-467.000.

Brustle, Walter, to Siemens Aktiengesellschaft. Electric roll-type capacitor. 4,495,544, Cl. 361-323.000.

Bryant, Anthony J.: *See*—
Bennett, Walter; Ablewhite, John H.; and Bryant, Anthony J., 4,495,001, Cl. 148-11.5GA.

Bryant, Robert J., to Sterling Drug Inc. Process for substitution of aromatic organic compounds. 4,495,353, Cl. 546-178.000.

Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., to AT&T Technologies, Inc. Self-aligning cover for modular tricoupler. 4,494,815, Cl. 339-123.000.

Bublitz, Hermann R.: *See*—
Barthel, Jan; and Bublitz, Hermann R., 4,495,597, Cl. 364-900.000.

Buckler, Robert T.; and Ward, Frederick E., to Miles Laboratories, Inc. Tricyclic antidepressant drug immunogens, antibodies, labeled conjugates, and related derivatives. 4,495,281, Cl. 435-7.000.

Buckley, Thomas F., to Chevron Research Company. Methods and compositions for preventing the precipitation of zinc dialkyldithiophosphates which contain high percentages of a lower alkyl group. 4,495,075, Cl. 252-32.70E.

Buckley, William H. Method of and apparatus for indicating characteristics of undulating data. 4,495,585, Cl. 364-487.000.

Budahn, Peter; and Ehlers, Jorn, to British Petroleum Company Limited, The. Preparation of catalysts by the precipitation of a hydroxide or sulfide from an emulsion in the presence of carbonaceous solid. 4,495,306, Cl. 502-185.000.

Bugaut, Andree ; and Estradier, Francoise, to L'Oreal. 2,4-Dihydroxydiphenylamines and hair dyeing compositions and method. 4,494,953, Cl. 8-408.000.

Bujard, Hermann G.; Chang, Annie C. Y.; and Cohen, Stanley N., to Leland Stanford Jr. University, The Board of Trustees of the. Cloned high signal strength promoters. 4,495,280, Cl. 435-6.000.

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Buon, Georges; and Fidel, Howard, to Biosound, Inc. Ultrasonic sector scanner. 4,494,548, Cl. 128-660.000.

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Neri, Carlo; and Buonomo, Franco, 4,495,371, Cl. 568-427.000.

Burdick, Thomas H.; Vasconcellos, Alfred; and Whitney, William G., to W. G. Whitney Corporation. Warmer for temperature conditioning wet dressings and other articles. 4,495,402, Cl. 219-214.000.

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Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm, 4,495,624, Cl. 373-93.000.

Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., to Motorola, Inc. Digital voice storage mobile. 4,495,647, Cl. 455-38.000.

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Burt, Dan L.: *See*—
Anderson, George F.; and Burt, Dan L., 4,495,222, Cl. 427-89.000.

Buryakov, Valery M.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

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Butler, David V.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,495,172, Cl. 424-61.000.

Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., to Allied Corporation. Filtration of inclusions from molten metal alloy. 4,494,985, Cl. 75-93.00R.

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Byler, Richard E.: *See*—
McCarthy, James P.; and Byler, Richard E., 4,494,423, Cl. 74-869.000.

Bynum, Byron G., to Motorola, Inc. Voltage transient protection circuit. 4,495,536, Cl. 361-91.000.

C. Behrens AG: *See*—
Bredow, Walter; and Otto, Gerhard, 4,495,398, Cl. 219-121.0LG.

C. F. Sauer Company, The: *See*—
Cleevely, Bruce T., 4,494,679, Cl. 222-151.000.

C. Hoegger & Cie. AG: *See*—
Trottmann, Bruno, 4,494,276, Cl. 17-1.00F.

C-I-L Inc.: *See*—
Cameron, Gordon M.; and Orlando, John V., 4,495,161, Cl. 423-167.000.

Cadre Corporation, The: *See*—
Gitman, Grigory M., 4,494,927, Cl. 432-9.000.

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Cal Custom Accessories, Inc.: *See*—
Graff, Henry W., 4,495,552, Cl. 362-297.000.

Cal Detect, Inc.: *See*—
Hutson, Donald G., 4,495,418, Cl. 250-343.000.

Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., to Connelly Skis, Inc. Water ski binding. 4,494,939, Cl. 441-70.000.

Calderon, Albert. Method for direct reduction of iron oxide utilizing induction heating. 4,494,984, Cl. 75-11.000.

Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., to Texas Instruments Incorporated. Electronic data processing apparatus with equation operating system having implied multiplication of two hierarchical ranks. 4,495,592, Cl. 364-754.000.

Calmes, Marc: *See*—
Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, 4,494,971, Cl. 65-19.000.

Calvert, Robert B.; and Rollmann, Louis D., to Mobil Oil Corporation. Synthesis of ZSM-5 utilizing a mixture of quaternary ammonium ions and amines. 4,495,166, Cl. 423-329.000.

Cam Gears Limited: *See*—
Webber, Gordon E. G.; and Wilson, Alan G., 4,494,446, Cl. 91-375.00A.

Camden, Thomas M., Jr.; and Orr, William L., to Westinghouse Electric Corp. Maximum power capability blanket for nuclear reactors. 4,495,136, Cl. 376-172.000.

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Mora, Camillo C., 4,495,186, Cl. 514-255.000.

Campagnie Industrielle des Communications Cit-Alcatel: *See*—
Dupuis, Bernard; Pasquet, Jean-Pierre; and Coppens, Christian, 4,495,618, Cl. 370-66.000.

Campbell, Alexander F.: *See*—
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.

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Smith, Edgar C.; and Campbell, James B., 4,494,864, Cl. 355-22.000.

Campillo, Christian; and Michaud, Jean-Pierre, to Ste Look. Locking device for a ski binding. 4,494,767, Cl. 280-612.000.

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Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.

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Cann, Gordon L. Micro-arc milling of metallic and non-metallic substrates. 4,495,399, Cl. 219-121.0PY.

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Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.

Canon Kabushiki Kaisha: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.
Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, 4,494,850, Cl. 354-416.000.
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,495,432, Cl. 310-328.000.
Kawabata, Takashi, 4,495,415, Cl. 250-336.100.
Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, 4,494,842, Cl. 354-173.110.
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,494,886, Cl. 400-208.000.
Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, 4,495,527, Cl. 360-33.100.
Ogawa, Masahiko, 4,494,848, Cl. 354-403.000.
Suzuki, Kenichi, 4,495,634, Cl. 378-173.000.
Tachika, Tetsuji; Sakamaki, Hisashi; and Hattori, Hiroyuki, 4,494,861, Cl. 355-14.00R.
Takahashi, Hideyuki; and Ishikawa, Shozo, 4,495,264, Cl. 430-58.000.
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.
Yamada, Masanori, 4,494,847, Cl. 354-403.000.

Capdeboscq, Andre; and Ferry, Jean-Claude, to Societe Nationale Elf Aquitaine (Production). Electrical connection device for an underwater well head. 4,494,602, Cl. 166-65.00R.

Capp, John: *See*—
Cath, Pieter G.; Capp, John; and Loeffler, William P., 4,495,558, Cl. 364-563.000.

Carberry, Victor V. Tilt trailer. 4,494,797, Cl. 298-5.000.

Carl Still GmbH & Co. KG, Firma: *See*—
Breidenbach, Dieter; Mosebach, Wilhelm; and Dellmann, Winfried, 4,495,031, Cl. 201-28.000.

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Carmichael, Wayne E. Self-contained compact electric beverage brewing travel kit. 4,495,404, Cl. 219-281.000.

Carney, Patrick T. Device and method for pressure testing. 4,494,402, Cl. 73-40.000.

Carr, David R.: *See*—
Parks, John R.; Carr, David R.; and Fox, Peter F., 4,495,644, Cl. 382-3.000.

Carrier Corporation: *See*—
Daley, Eugene E., Jr.; and O'Grady, Thomas R., 4,494,813, Cl. 339-99.00R.
Raymond, Glendon A., 4,494,382, Cl. 62-160.000.

Carter, Larry D., to Oy Fiskars AB. Hand-held dual knife sharpener. 4,494,340, Cl. 51-214.000.

Cartwright, James M., Jr., to RCA Corporation. Programmable logic gates and networks. 4,495,427, Cl. 307-469.000.

Casadio, Silvano: *See*—
Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P., 4,495,199, Cl. 514-467.000.

Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., to International Telephone and Telegraph Corporation. Valve arrangement for an air-operated diaphragm pump. 4,494,574, Cl. 137-625.600.

Casselli, Aveo J.: *See*—
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., 4,494,270, Cl. 15-377.000.

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Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, to Zvs Vyzkumnevyvojovy ustav, koncernova. Weft beat-up mechanism for looms. 4,494,578, Cl. 139-188.00A.

Ceiling Dynamics, Inc.: *See*—
Sharp, Joseph F., 4,494,350, Cl. 52-665.000.

Celanese Corporation: *See*—
Dammann, Laurence G., 4,495,367, Cl. 564-208.000.

Celler, George K.; Lischner, David J.; and Robinson, McDonald, to AT&T Bell Laboratories. Method of making dielectrically isolated silicon devices. 4,494,303, Cl. 29-576.00W.

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Berry, James A.; and Sherman, Morton, 4,494,343, Cl. 52-309.110.

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Lacour, Gilles; and Esteveny, Serge, 4,494,478, Cl. 118-50.000.

Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, to Sorin Biomedica S.p.A. Method for activating a pyrocarbon electrode tip. 4,495,039, Cl. 204-130.000.

Cestaro, Victor L.: *See*—
Sciarra, Michael J.; and Cestaro, Victor L., 4,494,553, Cl. 128-721.000.

CF Industries, Inc.: *See*—
Davis, Charles E., 4,494,647, Cl. 198-494.000.

Chacko, Varkki P.; and Kraft, Timothy J., to Allied Corporation. Glass reinforced polyamide composition containing acrylic core/shell polymer. 4,495,324, Cl. 524-504.000.

Chambers, Aaron L., to Atasi Corporation. Disk memory indexing system. 4,495,533, Cl. 360-72.200.

Chambers, Brian: *See*—
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, 4,494,795, Cl. 297-355.000.

Chan, David C. K., to Chevron Research Company. Herbicidal N-(N'-hydrocarbyloxycarbamylalkyl)-2,6-dialkyl-alpha-haloacetanilides. 4,494,978, Cl. 71-117.000.

Chandler, Don G.: *See*—
Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., 4,494,583, Cl. 141-83.000.

Chanel: *See*—
Lehmann, Myrtil B., 4,494,665, Cl. 215-330.000.

Chang, Annie C. Y.: *See*—
Bujard, Hermann G.; Chang, Annie C. Y.; and Cohen, Stanley N., 4,495,280, Cl. 435-6.000.

Chang, Paul T.: *See*—
Richards, Edward W.; and Chang, Paul T., 4,495,468, Cl. 328-155.000.

Chao, Hung-Ya, to Moore Business Forms, Inc. Microencapsulation by interchange of multiple emulsions. 4,495,509, Cl. 346-215.000.

Chaoui, Samir M., to Bear Medical Systems, Inc. Laryngeal prosthesis. 4,494,252, Cl. 3-1.300.

Chapman, Rick J.: *See*—
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Bernays, David J., Jr., 4,495,460, Cl. 324-77.00A.

Charruau, Stephane, to Thomson-CSF. System for selecting high-reliability integrated circuits. 4,495,622, Cl. 371-20.000.

Chasar, Dwight W., to B. F. Goodrich Company, The. 3,6-Di-t-butyl-2-naphthyl catechol phosphite and compositions thereof. 4,495,320, Cl. 524-101.000.

Chaudhry, Viren: *See*—
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, 4,495,177, Cl. 424-147.000.

Chavin, Stephen I.; and Fay, Philip J., to University of Rochester. Preparation of highly purified human antihemophilic factor. 4,495,175, Cl. 424-101.000.

Chemische Werke Huls A.G.: *See*—
Rigler, Josef-Karl; Leithauser, Horst; and Osterhoff, Heinz, 4,495,224, Cl. 427-222.000.
Wolf, Elmar; and Schmitt, Felix, 4,495,229, Cl. 427-388.200.

Chen, Yu-Tsai: *See*—
Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., 4,495,328, Cl. 524-606.000.

Chepurnoi, Anatoly D.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Cherkasova, Ljudmila V.: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Chernovitz, John J.: *See*—
Bialczak, Edward C.; and Chernovitz, John J., 4,495,269, Cl. 430-150.000.

Chernykh, Viktor V.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Chevron Research Company: *See*—
Buckley, Thomas F., 4,495,075, Cl. 252-32.70E.

Chan, David C. K., 4,494,978, Cl. 71-117.000.
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., 4,495,058, Cl. 208-11.00R.
Gibson, Kirk R., 4,495,308, Cl. 502-355.000.
Liston, Thomas V., 4,495,088, Cl. 252-32.70E.
Mayer, Jerome F.; and Miller, Stephen J., 4,495,061, Cl. 208-89.000.
Streib, Stephen F., 4,495,488, Cl. 340-606.000.
Wallman, P. Henrik, 4,495,059, Cl. 208-11.00R.

Chibnik, Sheldon, to Mobil Oil Corporation. Lubricating oil composition containing reaction product of tetrahydropyrimidines. 4,495,076, Cl. 252-38.000.

Chimicasa GmbH: *See—*
Wolf, Erich; and Deininger, Rolf, 4,495,213, Cl. 426-548.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Chisso Corporation: *See—*
Sugihara, Taizo; and Aoki, Tsuyoshi, 4,495,133, Cl. 264-504.000.

Choudhury, Abu N. M. M.: *See—*
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.

Christianson, Donald D.; and Friedrich, John P., to United States of America, Agriculture. Production of food-grade corn germ product by supercritical fluid extraction. 4,495,207, Cl. 426-312.000.

Christie, George M.; and Holmes, James M. Fuel product. 4,494,962, Cl. 44-15.00D.

Christner, Larry G.; and Fan, Jen-Jung, to Energy Research Corporation. Fuel reformer. 4,495,154, Cl. 422-203.000.

Christy Firebrick Company: *See—*
Herring, Thomas M., 4,494,295, Cl. 29-432.000.

Chu, Alan C. Paint brushes. 4,494,268, Cl. 15-176.000.

Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, to Univerzita Komenskeho. Multi-layer scintillation chamber for the simultaneous measurement of radioactive samples. 4,495,420, Cl. 250-367.000.

Chung, Betsy A., executor: *See—*
Chung, Rack H., deceased, 4,495,331, Cl. 524-783.000.

Chung, Betsy A., executrix: *See—*
Chung, Rack H., deceased; and Chung, Betsy A., executrix, 4,495,330, Cl. 524-783.000.

Chung, Rack H., deceased; and by Chung, Betsy A., executrix, to General Electric Company. Crosslinkers for RTV compositions. 4,495,330, Cl. 524-783.000.

Chung, Rack H., deceased (by Chung, Betsy A., executor), to General Electric Company. Scavengers for RTV silicone rubber compositions. 4,495,331, Cl. 524-783.000.

Chung, Raymond. Method for producing homogeneous batts of air-laid fibers. 4,495,119, Cl. 264-37.000.

Ciba-Geigy Corporation: *See—*
Abel, Heinz; and Guth, Christian, 4,494,952, Cl. 8-125.000.
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,495,350, Cl. 544-167.000.
Schafer, Paul; and Berendt, Hans-Ulrich, 4,494,956, Cl. 8-543.000.

Ciboit, Jacques J., to Laguilharre S.A. Process for concentrating a cold product and for preheating a circulating fluid. 4,495,212, Cl. 426-492.000.

Cioca, Gheorghe; Siegler, Marcel; and Spiliadis, Apostol, to Seton Company. Surface active agent compositions containing polypeptides and lignin sulfonic acid. 4,494,994, Cl. 106-308.00P.

Circeram: *See—*
Ricard, Jean; and Excoffon, Charles, 4,495,155, Cl. 422-248.000.

Ciuba, Stanley J.; and Bartelme, Michael J., III, to Economics Laboratory, Inc. Method and composition for the prevention or inhibition of corrosion. 4,495,225, Cl. 427-236.000.

CKD Corporation: *See—*
Ogasawara, Yoshinari, 4,494,561, Cl. 137-204.000.

Claflin, H. Bruce. Method of operating a blast furnace to extract carbonaceous oil and gas from bituminous materials. 4,495,054, Cl. 208-8.00R.

Clampitt, Lawrence L.: *See—*
Perlmutter, Michael; and Clampitt, Lawrence L., 4,494,873, Cl. 356-350.000.

Clar, Georges: *See—*
Coussau, Jean; and Clar, Georges, 4,494,907, Cl. 414-749.000.

Clarion Co., Ltd.: *See—*
Hamada, Masanori, 4,495,653, Cl. 455-277.000.

Clark, James B.: *See—*
Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., 4,495,200, Cl. 424-286.000.

Clark, James M.: *See—*
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Clark, Thomas A.: *See—*
Britton, Frederick G.; and Clark, Thomas A., 4,494,738, Cl. 267-140.000.

Clay, Sylvia J. Napkin holder. 4,494,718, Cl. 248-1.000.

Claypool, Mark P.: *See—*
Shay, Timothy W.; and Claypool, Mark P., 4,494,656, Cl. 209-524.000.

Cleary, Michael T., to UOP Inc. Process for separating fatty and rosin acids from unsaponifiables. 4,495,094, Cl. 260-97.600.

Cleary, Michael T.; and Laughlin, William C., to UOP Inc. Adsorbent and process for separating fatty acids from rosin acids. 4,495,106, Cl. 260-419.000.

Cleevely, Bruce T., to C. F. Sauer Company, The. Thermoplastic container closure for dispensing solids. 4,494,679, Cl. 222-151.000.

Clements, Arthur C. Truss structure. 4,494,349, Cl. 52-633.000.

Clements, Porter, to Katalco Corporation. Shaped catalyst particle for use in hydroprocessing of petroleum oils. 4,495,307, Cl. 502-305.000.

Clymer, Ronald S. Mounted spring device for resisting flexing. 4,494,662, Cl. 272-134.000.

Coast Foundry & Manufacturing Company: *See—*
Stephens, James B., 4,494,562, Cl. 137-436.000.

Coburn Optical Industries, Inc.: *See—*
Griffith, John M., 4,494,667, Cl. 220-19.000.
Petcen, Donald H., 4,494,344, Cl. 38-102.200.
Petcen, Donald H., 4,495,015, Cl. 156-80.000.

Codex Corporation: *See—*
Treen, Kevin L., 4,495,567, Cl. 364-200.000.

Codman & Shurtleff: *See—*
Praderio, Joseph J., 4,494,653, Cl. 206-370.000.

Coffen, David L.; and Hengartner, Urs O., to Hoffmann-La Roche Inc. Process for bicyclic diketones. 4,495,354, Cl. 546-146.000.

Cogez, Jean, to Essilor International. Device for determining and measuring monocular pupillary deviations in a patient's eyes. 4,494,836, Cl. 351-204.000.

Cohen, Peter I.: *See—*
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., 4,495,251, Cl. 428-548.000.

Cohen, Stanley N.: *See—*
Bujard, Hermann G.; Chang, Annie C. Y.; and Cohen, Stanley N., 4,495,280, Cl. 435-6.000.

Cole, Robert; and Stephenson, James E., to Albright & Wilson Limited. Flameproofing textiles. 4,494,951, Cl. 8-195.000.

Coles Cranes Limited: *See—*
Thomasson, William R., 4,494,351, Cl. 52-690.000.

Collins, James H., to Shell Oil Company. Solvent resistant polymeric composition. 4,495,323, Cl. 524-426.000.

Collins, John L.: *See—*
Young, Hartley F.; Remes, Wally A.; and Collins, John L., 4,494,463, Cl. 104-17.00A.

Collonia, Harald, to VDO Adolf Schindling AG. Device for electric control of the speed of an automotive vehicle. 4,495,454, Cl. 318-663.000.

Colwill, Richard H. Synchronous copying and collating system. 4,494,855, Cl. 355-1.000.

Comau S.p.A.: *See—*
Rossi, Cristiano, 4,494,687, Cl. 228-47.000.

Combustion Engineering, Inc.: *See—*
Rickard, Earl K., 4,494,468, Cl. 110-234.000.

Comer, William T.: *See—*
Kreighbaum, William E.; and Comer, William T., 4,495,352, Cl. 544-284.000.

Command Automation, Inc.: *See—*
Simjian, Luther G., 4,494,757, Cl. 273-183.00C.

Commissariat a l'Energie Atomique: *See—*
De Conto, Pierre; and Guipont, Raymond, 4,495,633, Cl. 378-55.000.

Comolli, Alfred G.; and Hippo, Edwin J., to HRI, Inc. Coal catalytic hydrogenation process using direct coal slurry feed to reactor with controlled mixing conditions. 4,495,055, Cl. 208-10.000.

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Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Gilbert, Takats; and Gerald, Dumay, 4,495,568, Cl. 364-200.000.

Component Marking Systems, Inc.: *See—*
Pink, Frederick C., 4,494,456, Cl. 101-35.000.

Compton, Warren R.: *See—*
Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., 4,494,373, Cl. 60-253.000.

Concrete Pipe & Products Corp.: *See—*
Buttner, Robert C., 4,494,576, Cl. 138-175.000.

Connelly Skis, Inc.: *See—*
Calapp, David E.; Ackert, Gail M.; and Brown, Roger J., 4,494,939, Cl. 441-70.000.

Connor, Larry W.: *See—*
Lubin, David; Connor, Larry W.; and Glass, Samuel W., 4,495,383, Cl. 179-100.00L.

Conoco Inc.: *See—*
Siebert, Robert M.; and Lahann, Richard W., 4,495,292, Cl. 436-25.000.

Container Technologies, Inc.: *See—*
Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.

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Weit, James G., 4,495,557, Cl. 363-89.000.

Cook, Incorporated: *See—*
Gianturco, Cesare, 4,494,531, Cl. 128-1.00R.

Cook, Kenneth G., to M-O Valve Company Limited, The. Excess voltage arresters. 4,495,539, Cl. 361-124.000.

Cook, William E.; Vodian, Morton A.; and Haunold, Otto, to Beckman Instruments, Inc. Multiple object capturing and processing device. 4,495,150, Cl. 422-99.000.

Cooke, Larry: *See—*
Zasio, John J.; and Cooke, Larry, 4,495,629, Cl. 377-70.000.

Coons, Robert R.: *See—*
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.

Cooper LaserSonics, Inc.: *See—*
Rzewinski, Leonard, 4,494,932, Cl. 433-88.000.

Cooper, N. Jeffrey: *See—*
Cooper, Newell J.; and Cooper, N. Jeffrey, 4,494,666, Cl. 220-3.000.
Cooper, Newell J.; and Cooper, N. Jeffrey. Pressure containment vessel apparatus for leaking gas cylinder. 4,494,666, Cl. 220-3.000.
Coopers Filters Limited: *See—*
Gladstone, Robert S., 4,494,575, Cl. 137-846.000.
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Kurosu, Tomio; and Yoshikawa, Yukio, 4,494,846, Cl. 354-400.000.
Coppens, Christian: *See—*
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Corcuff, Pierre: *See—*
Abrioux, Andre H.; Corcuff, Pierre; and Leveque, Jean L., 4,494,555, Cl. 128-755.000.
Cordier, Georges, to Rhone-Poulenc Agrochimie. Process for the preparation of meta-halogenoanilines. 4,495,368, Cl. 564-412.000.
Cordis Corporation: *See—*
Slocum, Chester D.; and Batty, John R., Jr., 4,494,545, Cl. 128-419.00P.
Corn, John E., to Ashland Oil, Inc. Method of continuously forming an acid fluoride from carbon monoxide, anhydrous hydrogen fluoride and an olefin. 4,495,110, Cl. 260-544.00A.
Corning Glass Works: *See—*
Albertsen, Peter S., 4,494,525, Cl. 126-289.000.
Bhagavatula, Venkata A.; and Keck, Donald B., 4,494,968, Cl. 65-3.120.
Bhagavatula, Venkata A., 4,494,969, Cl. 65-3.120.
Brezinski, Donald P., 4,495,052, Cl. 204-435.000.
Souza, Raymond L., 4,495,053, Cl. 204-435.000.
Cornwell, Charles E. Hydraulic cement composition and method for use as protective coating for substrates. 4,495,228, Cl. 427-385.500.
Corrie, John D.; and Tooley, Mark A., to Westinghouse Brake & Signal Co., Ltd. Vital transmission checking apparatus for communication channels. 4,494,717, Cl. 246-28.00F.
Corsette, Douglas F. Manually operated dispensing pump. 4,494,680, Cl. 222-321.000.
Cosmo, Nicola, to AMP Incorporated. Low profile chip carrier contact. 4,494,807, Cl. 339-17.0CF.
Cossette, Marcel: *See—*
Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, 4,495,223, Cl. 427-215.000.
Coue , Maurice E. L., to Huret et ses Fils. Device for mounting a derailleur on the frame lug of a cycle. 4,494,944, Cl. 474-82.000.
Coulter Electronics, Inc.: *See—*
Drury, F. Robert; and Graham, Marshall D., 4,494,479, Cl. 118-120.000.
Foster, John E., 4,495,405, Cl. 219-510.000.
Council of Scientific and Industrial Research: *See—*
Ramani, Rajan V., 4,494,369, Cl. 57-76.000.
Coussau, Jean; and Clar, Georges, to Framatome. Positioning and removal device for a checking means or a tool in a receiver installation. 4,494,907, Cl. 414-749.000.
Covey, Ray M., Jr. Carburetor/vaporizer. 4,494,516, Cl. 123-557.000.
Crane Co.: *See—*
Hirzel, Edgar A., 4,495,589, Cl. 364-565.000.
Creative Environments, Inc.: *See—*
Altemose, James L., 4,494,788, Cl. 294-161.000.
Creed, Durwood L., to United States of America, Air Force. Method and means for providing frequency agile operation of MTI radar. 4,495,501, Cl. 343-7.700.
Cronin, Michael J., to Lockheed Corporation. Multi role primary/auxiliary power system with engine start capability for aircraft. 4,494,372, Cl. 60-39.070.
Cross, Laurence A., Jr., to Microsize, Inc. Card retainer and control means for information retrieval devices. 4,495,066, Cl. 209-608.000.
Cross, Ronald H., to Bilan, Inc. Thermoelectric cooling device and gas analyzer. 4,494,380, Cl. 62-3.000.
Cruse, Lee H., to Foster Manufacturing Company. Bell-mouth ports for pneumatic couplings using O-rings. 4,494,728, Cl. 251-149.900.
Crutcher Resources Corporation: *See—*
Thompson, Floyd M., 4,495,400, Cl. 219-125.120.
Cruzen, Gerald S.; Izadi, Said; and Nagy, Peter, to Williams International Corporation. Method of manufacturing a turbine rotor. 4,494,287, Cl. 29-156.80R.
Cullen, John F., to Dimensional Merchandising, Inc. Display package. 4,494,650, Cl. 206-45.340.
Cullity, W. Daniel. Sighting device for firearms and the like. 4,494,327, Cl. 42-1.00S.
Cummings, John H. Compact fluorescent lamp combination, and method of making it. 4,495,443, Cl. 315-58.000.
Cummins Engine Company, Inc.: *See—*
Wilcox, John P., 4,494,946, Cl. 474-242.000.
Cursillat, Jackie: *See—*
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.
Daihatsu Motor Co., Ltd.: *See—*
Kawakatsu, Shiro; and Kawasaki, Toshikazu, 4,495,484, Cl. 340-52.00D.
Daimler-Benz AG: *See—*
Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, 4,495,115, Cl. 261-44.00F.
Strifler, Paul, 4,494,404, Cl. 73-113.000.
Daimler-Benz Aktiengesellschaft: *See—*
Augustin, Ulrich, 4,494,514, Cl. 123-504.000.
Daley, Eugene E., Jr.; and O'Grady, Thomas R., to Carrier Corporation. Electric connector assembly. 4,494,813, Cl. 339-99.00R.
Dammann, Laurence G., to Celanese Corporation. High charge density, cationic methacrylamide based monomers and their polymers. 4,495,367, Cl. 564-208.000.
Damon Biotech, Inc.: *See—*
Jarvis, Allan P., Jr.; and Lim, Franklin, 4,495,288, Cl. 435-241.000.
Dan T. Moore Co., The: *See—*
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., 4,494,671, Cl. 220-256.000.
Danilenko, Viktor Y.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Danno, Yoshiaki; and Murakami, Nobuaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Variable displacement engine. 4,494,503, Cl. 123-198.00F.
Danno, Yoshiaki: *See—*
Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, 4,494,502, Cl. 123-198.00F.
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da Silva Pinto, Gabriel, to Volund Miljoteknik A/S. Stepped grate for an incinerator plant. 4,494,469, Cl. 110-281.000.
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Lyman, George F.; and Lowry, Alan, 4,495,289, Cl. 435-284.000.
Davco, Inc.: *See—*
Davis, Leland L., 4,495,069, Cl. 210-114.000.
David, Agoston: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.
Davidson, Charles: *See—*
Larson, Ove; and Davidson, Charles, 4,494,417, Cl. 74-469.000.
Davis, Charles E., to CF Industries, Inc. Cleaning assembly for a dryer feed chute. 4,494,647, Cl. 198-494.000.
Davis, Charles L.: *See—*
Deeken, William O.; and Davis, Charles L., 4,495,126, Cl. 264-137.000.
Davis, Duane J., to General Signal Corporation. Piston pump servo control. 4,494,911, Cl. 417-222.000.
Davis, Howard F., to 8-Track Shoe Corp. Shoe outsole. 4,494,320, Cl. 36-25.00R.
Davis, John C.: *See—*
Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.
Davis, Leland L., to Davco, Inc. Drain system for fuel processor apparatus. 4,495,069, Cl. 210-114.000.
Dayco Corporation: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
de Baan, Johannes J.; and Honig, Michael, to August Bilstein GmbH & Co. KG. Piston guide and seal for dual-tube hydropneumatic shock absorber. 4,494,632, Cl. 188-269.000.
DeBergalis, Michael; and O'Fee, Robert P., to Du Pont de Nemours, E. I., and Company. Polymer-bound ultraviolet stabilizer coating compositions containing cross linkers. 4,495,325, Cl. 524-507.000.
DeBoo, Robert V.: *See—*
Viriyayuthakorn, Montri; and DeBoo, Robert V., 4,495,022, Cl. 156-500.000.
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., to Labofina, S.A. Composing compositions. 4,494,975, Cl. 71-25.000.
Deborde, Albert H.: *See—*
Grandvallet, Gilles; and Deborde, Albert H., 4,494,579, Cl. 139-429.000.
Decker, G. Warren. Insulated glass adaptive method and apparatus. 4,494,342, Cl. 52-203.000.
De Conto, Pierre; and Guipont, Raymond, to Commissariat a l'Energie Atomique. Process and apparatus for the dimensional and non-destructive control of a hollow member. 4,495,633, Cl. 378-55.000.
Dedolph, Richard R., to Gravi-Mechanics Co. Method of forming a urethane prepolymer and its use in consolidating aggregate material. 4,495,310, Cl. 521-99.000.
Deeken, William O.; and Davis, Charles L., to Goodyear Tire & Rubber Company, The. Adhesive activated emulsion to a polyester yarn. 4,495,126, Cl. 264-137.000.
Deere & Company: *See—*
Kumar, Viraraghavan S.; and Olson, Rohn L., 4,494,726, Cl. 251-29.000.
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.
Winter, David C., 4,494,883, Cl. 384-439.000.
Deft Chemical Coatings, Inc.: *See—*
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DeGroot, Rudolph C., Sr.: *See—*
Van Dyke, Helga M.; and DeGroot, Rudolph C., Sr., 4,494,554, Cl. 128-734.000.
Degussa Aktiengesellschaft: *See—*
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de Haan, Frans W.: *See—*
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DeHaan, Robert; and Gisvold, Lee D., to Amana Refrigeration, Inc. Flue pipe connection assembly and method of connection thereof. 4,494,598, Cl. 165-47.000.

Deighton, Kenneth A.: *See*—
Brocklebank, Norman; and Deighton, Kenneth A., 4,494,906, Cl. 414-719.000.

Deininger, Rolf: *See*—
Wolf, Erich; and Deininger, Rolf, 4,495,213, Cl. 426-548.000.

Deiss, Michael S., to RCA Corporation. Remote controlled receiver with provisions for automatically programming a channel skip list. 4,495,654, Cl. 455-151.000.

Dekker, Lambert: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.

DeLacy, Thomas J., to Ford Aerospace & Communications Corporation. Method and apparatus for non-destructive testing of composite materials. 4,494,408, Cl. 73-587.000.

DeLau, Bruce E. Portable quick chilling and heating appliance. 4,494,600, Cl. 165-132.000.

Dellmann, Winfried: *See*—
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De Lockerente, Serge R.: *See*—
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Del Valle, Jamie L., to Master Modular Homes, Inc. Method for precasting steel reinforced concrete box-like modules. 4,495,131, Cl. 264-256.000.

Delvaux, Pierre: *See*—
Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, 4,495,223, Cl. 427-215.000.

De Meo, Franco: *See*—
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Denef, Dan E.: *See*—
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Dennison Manufacturing Company: *See*—
Price, Lewis C., Jr., 4,494,458, Cl. 101-391.000.

Deno, Koji, to Murata Kikai Kabushiki Kaisha. Yarn end untwisting device for a pneumatic yarn splicing device. 4,494,366, Cl. 57-22.000.

Derby, Palmer P., to Raytheon Company. Microwave simmer pot. 4,495,392, Cl. 219-10.55E.

DeReamer, Sharon M. B.; and Eifling, Dennis R., to Dresser Industries, Inc. Vibratory screening apparatus and method. 4,495,065, Cl. 209-243.000.

Derndinger, Hans-Otto: *See*—
Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, 4,495,115, Cl. 261-44.00F.

Desbrandes, Robert; and Norel, Guy, to Institut Francais du Petrole. Method for determining the dip angle of geological formations traversed by a borehole. 4,495,605, Cl. 367-33.000.

Descamps, Bernard, to Thomson-CSF. Bipolar transistor controlled by field effect by means of an isolated gate. 4,495,513, Cl. 357-43.000.

Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., to Harris Graphics Corporation. Control system for pre-setting and operation of a printing press and collator. 4,495,582, Cl. 364-469.000.

Develop Dr. Eisbein GmbH & Co.: *See*—
Moser, Kurt, 4,494,746, Cl. 271-164.000.

Devlin, George V.: *See*—
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.

Dewing, Ernest W.: *See*—
Gesing, Adam J.; and Dewing, Ernest W., 4,495,047, Cl. 204-245.000.

de Witte, Olivier: *See*—
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.

D'Hervilly, Guy: *See*—
Brunin, Armand; and D'Hervilly, Guy, 4,495,626, Cl. 375-19.000.

Dickinson, Robert V.; and Galie, Louis M., to System Development Corporation. Method and means using digital data processing means for locating representations in a stored textual data base. 4,495,566, Cl. 364-200.000.

Diebold, Incorporated: *See*—
Graef, Harry T.; and Newton, Kevin H., 4,494,747, Cl. 271-263.000.

Diefenbach, Horst: *See*—
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Diehl GmbH & Co.: *See*—
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Diepers, Heinrich; and Schewe, Herbert, to Siemens Aktiengesellschaft. Pressure-sensitive transducer using piezo ceramic material. 4,495,434, Cl. 310-338.000.

Diesel Kiki Co., Ltd.: *See*—
Torizuka, Keizi, 4,494,513, Cl. 123-495.000.

Dietz, Gunther: *See*—
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Dietz, Karl-Jurgen: *See*—
Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, 4,494,965, Cl. 55-16.000.

DiFranco, Dioniso, to Peel Truck & Trailer Repair Ltd. Support bar. 4,494,896, Cl. 410-148.000.

DiGeronimo, Michael J., to International Paper Company. Sterilization of packaging material. 4,494,357, Cl. 53-167.000.

Digital Equipment Corporation: *See*—
Gregory, Jack; and Landry, Christian C., 4,494,720, Cl. 248-371.000.
Gustafson, Roy W., 4,495,529, Cl. 360-46.000.

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Russell, James T., 4,495,609, Cl. 369-44.000.

DiMatteo, Paul; and Rosa, Joseph, to Robotic Vision Systems, Inc. Detection of three-dimensional information using a projected point or line of light. 4,494,874, Cl. 356-376.000.

Dimensional Merchandising, Inc.: *See*—
Cullen, John F., 4,494,650, Cl. 206-45.340.

Director-General of Agency of Industrial Science and Technology: *See*—
Mita, Akio; and Kashiwabara, Susumu, 4,495,082, Cl. 252-194.000.

Director-General of the Agency of Industrial Science and Technology: *See*—
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.

Discovision Associates: *See*—
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Dissosway, Marc A.: *See*—
Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.

Divers, Edward F.; Lascola, John C.; and Behers, Robert G., to United States of America, Interior. Extensible brattice support system for mine face ventilation. 4,494,894, Cl. 405-290.000.

Dobbs, John M., to Analogic Corporation. Method and apparatus for profiling structural sections. 4,495,635, Cl. 378-56.000.

Dobias, John J. Steam trap. 4,494,692, Cl. 236-59.000.

Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, to Robert Bosch GmbH. Pressure sensor for the combustion chamber of an internal combustion engine. 4,494,401, Cl. 73-35.000.

Dobson, William E.: *See*—
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., 4,495,286, Cl. 435-253.000.

Docutel Corporation: *See*—
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., 4,494,743, Cl. 271-11.000.

Dodge, William B.; and Halfon, Marc, to FMC Corporation. Process for producing alkali metal cyanates. 4,495,107, Cl. 260-453.00P.

Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., to Merck & Co., Inc. N-Carboxyl-thienamycin esters and analogs thereof as anti-inflammatory agents. 4,495,197, Cl. 514-210.000.

Dolak, Terence M.; and Martin, Tellis A., to Mead Johnson & Company. Antihypertensive isoindole derivatives. 4,495,194, Cl. 514-323.000.

Dolash, Thomas M.: *See*—
Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., 4,494,865, Cl. 355-32.000.

Dolenc, Anton, to Steyr-Daimler-Puch Aktiengesellschaft. Fuel injection nozzle for air-compressing, self-igniting reciprocating internal combustion engines. 4,494,700, Cl. 239-533.300.

Dolkemeyer, Wilfried; Keim, Karl-Heinz; and Meisenburg, Ewald, to Rheinische Braunkohlenwerke AG. Process for the production of pumpable coal slurries. 4,494,960, Cl. 44-51.000.

Domtar Inc.: *See*—
Nguyen, Xuan T., 4,495,163, Cl. 423-244.000.

Donatelli, Thomas F.; and Murray, Philip F., to Firestone Tire & Rubber Company, The. Rubber compounds containing zinc dimethacrylate. 4,495,326, Cl. 524-533.000.

Donovan, Timothy F.: *See*—
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Doolin, Thomas J. Blending asphaltite with lignite or bituminous coal. 4,494,958, Cl. 44-1.00G.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
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Ozaki, Satoru, 4,495,141, Cl. 376-251.000.

Dotzer, Richard; and Lechner, Ernst-Friedrich, to Siemens Aktiengesellschaft. Heat-removing circuit boards. 4,495,378, Cl. 174-68.500.

Doulton Industrial Products Limited: *See*—
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.

Douwe Egberts Koninklijke Tabaksfabriek Koffiebranderijen Theehandel N.V.: *See*—
Mooiweer, Gerben D., 4,495,211, Cl. 426-422.000.

Dow Chemical Company, The: *See*—
So, Ying-Hung, 4,495,036, Cl. 204-59.00R.
Sutton, Tonja R.; and Hughes, David W., 4,495,309, Cl. 521-51.000.
Vanderhider, James A.; and Lancaster, Gerald M., 4,495,081, Cl. 252-182.000.

Dow Corning Corporation: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,495,340, Cl. 528-15.000.
Smith, Jari K., 4,495,226, Cl. 427-326.000.

Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Company. Copolyamide from cycloaliphatic substituted nonane diamine. 4,495,344, Cl. 528-340.000.

Draper, Clifton W.; and Poate, John M., to AT&T Technologies, Inc. Laser surface alloying. 4,495,255, Cl. 428-669.000.

Draper, Wilburn D.; and Leakso, Melvin T., to International Business Machines Corporation. Multi sub-channel adapter with single status-/address register. 4,495,564, Cl. 364-200.000.

Dresser Industries, Inc.: *See—*
Aves, William L., Jr., 4,495,005, Cl. 148-16.500.
Aves, William L., Jr.; and Aves, Gary A., 4,495,006, Cl. 148-16.500.
DeReamer, Sharon M. B.; and Eifling, Dennis R., 4,495,065, Cl. 209-243.000.
Smith, John R. E., 4,495,606, Cl. 367-86.000.
Sutor, Peter T., 4,495,301, Cl. 501-124.000.

Drummond, Charles E. Ventilated toilet device. 4,494,255, Cl. 4-213.000.

Drury, F. Robert; and Graham, Marshall D., to Coulter Electronics, Inc. Slide preparation apparatus. 4,494,479, Cl. 118-120.000.

Dubi, Bernard: *See—*
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.

Duffy, Patrick E.: *See—*
Sgroi, Nunzio B.; and Duffy, Patrick E., 4,494,533, Cl. 128-75.000.

Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, to Northern Telecom Limited. Enclosure for electrical and electronic equipment with temperature equalization and control. 4,495,545, Cl. 361-384.000.

Dumanoir, Jean L., to Schlumberger Technology Corp. Machine method for determining the presence and location of hydrocarbon deposits within a subsurface earth formation. 4,495,604, Cl. 367-25.000.

Dumbeck, Robert F. Means and method of sensing motor rotation speed from stray escaping flux. 4,495,448, Cl. 318-54.000.

Dunn, Robert T.: *See—*
Brown, William M.; and Dunn, Robert T., 4,495,386, Cl. 179-2.510.

Du Pont de Nemours, E. I., and Company: *See—*
Boswell, George A., Jr., 4,495,196, Cl. 514-427.000.
DeBergalis, Michael; and O'Fee, Robert P., 4,495,325, Cl. 524-507.000.
Falcoff, Allan F., 4,494,677, Cl. 222-63.000.
Gebrian, Peter L.; and Jones, Charles B., 4,495,014, Cl. 156-80.000.
Gramm, Jeffrey S.; Mongan, Edwin L., Jr.; and Sheeran, Patrick J., 4,495,108, Cl. 260-453.700.
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Sowell, Lyles H., 4,494,921, Cl. 425-198.000.
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Zunker, David W., 4,495,245, Cl. 428-403.000.

Dupuis, Bernard; Pasquet, Jean-Pierre; and Coppens, Christian, to Campagnie Industrielle des Communications Cit-Alcatel. Digital switching network. 4,495,618, Cl. 370-66.000.

Dupuis, Emmanuel F. Container. 4,494,690, Cl. 232-22.000.

Duret, Jean, to Vallourec, S.A. Closed angle thread pipe joint. 4,494,777, Cl. 285-55.000.

Durr, Dieter; Rohr, Otto; and Bohner, Beat, to Ciba-Geigy Corporation. Heterocyclic esters of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid. 4,495,350, Cl. 544-167.000.

Duyker, Christiaan J. H.; and Balk, Albertus C., to Bibia Rubber B.V. Luggage binder for a bicycle or like vehicle. 4,494,684, Cl. 224-39.000.

Dwarakanath, Mirmira R., to AT&T Bell Laboratories. Stable fast-settling voltage reference buffer amplifier. 4,495,472, Cl. 330-277.000.

E-Systems, Inc.: *See—*
Keearns, Larry R., 4,495,580, Cl. 364-450.000.

Eastman Kodak Company: *See—*
Evans, Steven; and Elwood, James K., 4,495,099, Cl. 534-651.000.
Lambeth, David N., 4,494,868, Cl. 356-1.000.
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.
Marcus, Michael A., 4,494,841, Cl. 354-21.000.
Moore, Leslie G.; and Lee, Te-Hsung, 4,495,516, Cl. 358-54.000.
Phillips, Bobby M., 4,495,244, Cl. 428-399.000.
Reczek, James A.; and Elwood, James K., 4,495,098, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,100, Cl. 534-651.000.
VanderValk, Paul D., 4,495,263, Cl. 430-60.000.

Eaton Corporation: *See—*
Kelly, William W.; and Bradshaw, Cyril E., 4,494,510, Cl. 123-568.000.

Ebara Corporation: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.

Ebtron, Inc.: *See—*
Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., 4,494,406, Cl. 73-204.000.

Economics Laboratory, Inc.: *See—*
Ciuba, Stanley J.; and Bartelme, Michael J., III, 4,495,225, Cl. 427-236.000.

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Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., 4,494,481, Cl. 119-1.000.

Edwards, Thomas C., to Rovac Corporation. Vapor refrigeration cycle system with constrained rotary vane compressor and low vapor pressure refrigerant. 4,494,386, Cl. 62-402.000.

Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., to International Business Machines Corporation. Synchronization of CRT controller chips. 4,495,594, Cl. 364-900.000.

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Ehlers, Jorn: *See—*
Budahn, Peter; and Ehlers, Jorn, 4,495,306, Cl. 502-185.000.

Ehrenfellner, Hubert: *See—*
Knudson, Robert M.; and Ehrenfellner, Hubert, 4,494,919, Cl. 425-83.100.

Ehrhardt, Heinz; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, to Hoechst Aktiengesellschaft. Fungicidal 3-1,2,4-triazol-1-yl-1,2-diaryl-1-halogeno-prop-1-ene derivatives, compositions, and method of use. 4,495,191, Cl. 514-383.000.

Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., to General Electric Company. Shielded plastic microwave oven cavity. 4,495,251, Cl. 428-548.000.

Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Chloroacetic acid cyclohexylamides, their preparation, their use for controlling weeds and agents for this use. 4,494,983, Cl. 71-118.000.

Eifling, Dennis R.: *See—*
DeReamer, Sharon M. B.; and Eifling, Dennis R., 4,495,065, Cl. 209-243.000.

8-Track Shoe Corp.: *See—*
Davis, Howard F., 4,494,320, Cl. 36-25.00R.

Eikelboom, Lucas, to Hollandse Signaalapparaten B.V. Energy converter. 4,495,555, Cl. 323-2E.000.

Ekeibaev, Djusenkhan D.: *See—*
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Eklof, Ake T., to Atlas Copco Aktiebolag. Hydraulically operated impact device. 4,494,614, Cl. 173-116.000.

Electrolux Corporation: *See—*
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., 4,494,270, Cl. 15-377.000.

Electromotive, Inc.: *See—*
Long, Alexander, 4,494,509, Cl. 123-416.000.

Elektroschmelzwerk Kempten GmbH: *See—*
Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, 4,495,123, Cl. 264-69.000.

Elfin Corporation: *See—*
Kruesi, August H., 4,494,436, Cl. 87-23.000.

Eli Lilly and Company: *See—*
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.
Hoehn, Marvin M.; and Marconi, Gary G., 4,495,179, Cl. 514-9.000.
Matsumoto, Ken; and Ward, John S., 4,495,202, Cl. 514-721.000.

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Svaty, Vladimir; and Sevcik, Ladislav, 4,494,577, Cl. 139-20.000.

Elkin, Mikhail Y.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.

Ellis, Peter J.: *See—*
Mason, Ross S.; and Ellis, Peter J., 4,495,416, Cl. 250-338.000.

Elliston, Thomas L., to Hydra-Rig, Incorporated. Liquid nitrogen pump. 4,494,415, Cl. 74-44.000.

Ellwein, Rebecca A. Needlework art form. 4,495,230, Cl. 428-13.000.

Elwood, James K.: *See—*
Evans, Steven; and Elwood, James K., 4,495,099, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,098, Cl. 534-651.000.
Reczek, James A.; and Elwood, James K., 4,495,100, Cl. 534-651.000.

Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, to Nissan Motor Company, Limited. Optical power supply switching apparatus. 4,495,421, Cl. 250-551.000.

Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Idling controller of variable displacement engine. 4,494,502, Cl. 123-198.00F.

Energy Research Corporation: *See—*
Christner, Larry G.; and Fan, Jen-Jung, 4,495,154, Cl. 422-203.000.

Engelstein, Charles; Kassel, David L.; and Goodman, Harry, to Memory Protection Devices, Inc. Horizontal battery holder for cylinder cells. 4,495,257, Cl. 429-100.000.

Enuma Chain Manufacturing Co., Ltd.: *See—*
Ogino, Teiji, 4,494,945, Cl. 474-231.000.

Erb, Robert C. Universal microslad. 4,494,540, Cl. 128-303.100.

Eriksen, Tor, to Moss Rosenberg Verft A/S. System for mooring a floating structure. 4,494,475, Cl. 114-230.000.

Ernst Leitz Wetzlar GmbH: *See—*
Brueckner, Dietrich, 4,494,839, Cl. 353-101.000.

Esch, Heinz: *See—*
Nauroth, Peter; Esch, Heinz; and Turk, Gunter, 4,495,167, Cl. 423-339.000.

Esselborn, Reiner: *See—*
Bernhard, Horst; and Esselborn, Reiner, 4,494,993, Cl. 106-291.000.

Essex Group, Inc.: *See—*
Hedrick, Paul A., 4,495,130, Cl. 264-255.000.

Essilor International: *See—*
Cogez, Jean, 4,494,836, Cl. 351-204.000.

Essilor International Cie General d'Optique: *See—*
Tagnon, Luc; and Wajs, Georges, 4,494,569, Cl. 137-563.000.

Esteveny, Serge: *See*—
Lacour, Gilles; and Esteveny, Serge, 4,494,478, Cl. 118-50.000.
Estradier, Francoise: *See*—
Bugaut, Andree ; and Estradier, Francoise, 4,494,953, Cl. 8-408.000.
Etablissements Andre Zalkin et Cie: *See*—
Zalkin, Michel, 4,494,358, Cl. 53-331.500.
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, to Hitachi, Ltd. Magnetic bubble memory apparatus. 4,495,601, Cl. 365-1.000.
Evans, Lyle B. Infinite speed transmission with reciprocating yokes. 4,494,416, Cl. 74-119.000.
Evans, Robert F. Seal assemblies. 4,494,749, Cl. 277-22.000.
Evans, Steven; and Elwood, James K., to Eastman Kodak Company. Non-diffusible magenta compound capable of releasing a 4-(2-heterocyclazo)phenol having a heterocyclic ring fused thereto. 4,495,099, Cl. 534-651.000.
Everest, Charles E. Intra-optical light beam sighting system for an infrared thermometer. 4,494,881, Cl. 374-124.000.
Everman, Carl G. Split hub wheel apparatus. 4,495,032, Cl. 202-105.000.
Excell Manufacturing Company: *See*—
Kilguss, Howard M., 4,494,279, Cl. 24-336.000.
Excoffon, Charles: *See*—
Ricard, Jean; and Excoffon, Charles, 4,495,155, Cl. 422-248.000.
Exner, Rainer: *See*—
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Exxon Nuclear Company, Inc.: *See*—
Gehri, Aime A., 4,495,145, Cl. 376-261.000.
Gheri, Aime A., 4,495,146, Cl. 376-261.000.
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., to Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Promyshelennykh Gidroprivodov I Girodcavtomatiki. Composite piston of positive displacement hydraulic machine and method for manufacturing same. 4,494,448, Cl. 92-172.000.
Ezaki, Norio: *See*—
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.
F. William Carr: *See*—
Sciarra, Michael J.; and Cestaro, Victor L., 4,494,553, Cl. 128-721.000.
Fairchild Camera and Instrument Corporation: *See*—
Smith, Donald L.; and Jones, David B., 4,495,382, Cl. 179-81.00R.
Falcoff, Allan F., to Du Pont de Nemours, E. I., and Company. Apparatus for delivering accurate volume of liquid. 4,494,677, Cl. 222-63.000.
Fan, Jen-Jung: *See*—
Christner, Larry G.; and Fan, Jen-Jung, 4,495,154, Cl. 422-203.000.
Faraone, Lorenzo, to RCA Corporation. Method of making semiconductor device with multi-levels of polycrystalline silicon conductors. 4,494,301, Cl. 29-571.000.
Faria, Sixdeniel, to GTE Products Corporation. Electrophotographic copper doped cadmium sulfide material and method of making. 4,495,265, Cl. 430-95.000.
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., to Chevron Research Company. Process for generating superheated steam using retorted solids. 4,495,058, Cl. 208-11.00R.
Farr, Howard J.: *See*—
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.
Fauquant, Jacques: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.
Fay, Philip J.: *See*—
Chavin, Stephen I.; and Fay, Philip J., 4,495,175, Cl. 424-101.000.
Fegley, Charles R.; and Regneth, Lorenz, to AT&T Technologies, Inc. Aligning a workpiece to a body. 4,495,396, Cl. 219-85.00G.
Feiccabrino, Joseph A., to Uniroyal, Inc. Preparation of mono-nitro aromatic compounds. 4,495,372, Cl. 568-929.000.
Feldmuhle Aktiengesellschaft: *See*—
Bergmann, Kurt W.; and Westerhuis, Popko J., 4,495,029, Cl. 162-135.000.
Leimer, Gerhard; and Gugel, Ernst, 4,495,122, Cl. 264-65.000.
Felt Products Mfg. Co.: *See*—
Rogers, Ernest E., 4,495,423, Cl. 290-44.000.
Ferag Ag: *See*—
Honegger, Werner, 4,494,359, Cl. 53-430.000.
Honegger, Werner, 4,494,646, Cl. 198-459.000.
Ferrio, Linda J.: *See*—
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.
Ferry, Jean-Claude: *See*—
Capdeboscq, Andre; and Ferry, Jean-Claude, 4,494,602, Cl. 166-65.00R.
Fetsch, Elisabeth: *See*—
Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, 4,495,271, Cl. 430-277.000.
Feulner, Walter: *See*—
Schramm, Peter; and Feulner, Walter, 4,494,875, Cl. 356-402.000.
Feurer, Bernard; and Pigot, Gilles, to Alcon Pharmaceuticals, Limited. Method for the manufacture of contact lenses using microwave energy. 4,495,117, Cl. 264-1.400.
Fey, Maurice G.: *See*—
Heberlein, Joachim V. R.; and Fey, Maurice G., 4,495,625, Cl. 373-107.000.
Fichtel & Sachs AG: *See*—
Lutz, Manfred, 4,494,782, Cl. 292-96.000.
Fick, Charles M., Jr. Table for use with automobile trunks and the like. 4,494,465, Cl. 108-44.000.
Fidel, Howard: *See*—
Buon, Georges; and Fidel, Howard, 4,494,548, Cl. 128-660.000.
Fidler, Raymond E., Jr. Enclosure and frame therefor. 4,494,558, Cl. 135-102.000.
Fielder, William V. B., Jr., to Roper Corporation. Venetian blind assembly with improved ladder supporting tilt drums. 4,494,593, Cl. 160-177.000.
Fields, Larry D., to Yardney Corporation. Filter screen device. 4,495,072, Cl. 210-238.000.
Figgie International Inc.: *See*—
Ansite, William K., 4,494,538, Cl. 128-205.250.
Findley Adhesives, Inc.: *See*—
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., 4,495,011, Cl. 156-78.000.
Findley, Kenneth N., Jr.: *See*—
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., 4,495,011, Cl. 156-78.000.
Fini, Vincenzo: *See*—
Biagi, Gino; and Fini, Vincenzo, 4,494,317, Cl. 34-73.000.
Finnigan Mat GmbH: *See*—
Lerche, Heinz; Rache, Horst; and Wedde, Reiner, 4,495,413, Cl. 250-252.100.
Firbimatic S.R.L.: *See*—
Biagi, Gino; and Fini, Vincenzo, 4,494,317, Cl. 34-73.000.
Firestone Tire & Rubber Company, The: *See*—
Donatelli, Thomas F.; and Murray, Philip F., 4,495,326, Cl. 524-533.000.
Fischell, Robert E., to Johns Hopkins University, The. Plural module medication delivery system. 4,494,950, Cl. 604-66.000.
Fischer, David L.; and Waterstreet, William E., to Rudolf, John M. Tissue cutting and interfolding apparatus for Z webs. 4,494,741, Cl. 270-39.000.
Fischer, Jochen; and Scholl, Hans, to Kochs Adler AG. Method for identifying size and/or type of workpiece receiving means and sewing apparatus for carrying out said method. 4,494,470, Cl. 112-121.120.
Fischer, Michael F.: *See*—
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., 4,494,671, Cl. 220-256.000.
Fishel, Clark N. Valve accentuation mechanism for opposed inverted V engine. 4,494,442, Cl. 91-181.000.
Flanders Filters, Inc.: *See*—
Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., 4,494,403, Cl. 73-40.700.
Fleischer, Gene S.: *See*—
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., 4,494,270, Cl. 15-377.000.
Flensburg, Carl G. A.; and Isaksson, Rolf H. V. Apparatus for bundling sheets for fascicles. 4,494,360, Cl. 53-528.000.
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., to United States of America, Navy. Master buoy system for acoustic array deployment, using underwater glide bodies remotely launched from a submerged pod. 4,494,938, Cl. 441-33.000.
Flores, Luis: *See*—
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, 4,495,177, Cl. 424-147.000.
Flowerday, Carl, to Prince Corporation. Visor covering. 4,494,789, Cl. 296-97.00H.
FMC Corporation: *See*—
Dodge, William B.; and Halfon, Marc, 4,495,107, Cl. 260-453.00P.
Hill, Jerry M., 4,494,400, Cl. 73-1.00B.
Fogg, O. Douglas: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Belt band-clamping arrangement for safety belts in motor vehicles. 4,494,774, Cl. 280-806.000.
Fokker B.V.: *See*—
Breedveld, Cornelis A.; and de Haan, Frans W., 4,494,716, Cl. 244-213.000.
Van Bochove, Gijsbertus F. J.; and Somers, Petrus A. A. M., 4,494,410, Cl. 73-644.000.
Foley, Mark P.: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Folkerth, Harold E., to Shopsmith, Inc. Tilting table for a woodworking tool. 4,494,591, Cl. 144-286.00A.
Foltz, Carl L., to Halkey-Roberts Corporation. Conductor tube for flashlights. 4,495,551, Cl. 362-205.000.
Fonstad, Clifton G.: *See*—
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.
Ford Aerospace & Communications Corporation: *See*—
DeLacy, Thomas J., 4,494,408, Cl. 73-587.000.
Ford, Michael B.; and Griffin, Jim B. Method of cleaning and inhibiting sucker rod corrosion. 4,494,607, Cl. 166-311.000.
Ford Motor Company: *See*—
Bachle, Wilfred H., 4,494,693, Cl. 236-100.000.
Godwin, Paul K., Jr.; and Kell, Howard A., Jr., 4,494,712, Cl. 242-191.000.
Ma, Thomas T., 4,494,508, Cl. 123-406.000.
McCarthy, James P.; and Byler, Richard E., 4,494,423, Cl. 74-869.000.

Rao, Vemulapalli D. N.; and Wade, Wallace R., 4,494,375, Cl. 60-296.000.
Forestier, Alexandre, to S.N.E.C.M.A. Damping device for turbojet engine fan blades. 4,494,909, Cl. 416-190.000.
Forsman, Donald. Gold extracting process and apparatus. 4,494,986, Cl. 75-109.000.
Foster, John E., to Coulter Electronics, Inc. Automatic control system including error processing loop. 4,495,405, Cl. 219-510.000.
Foster Manufacturing Company: *See*—
Cruse, Lee H., 4,494,728, Cl. 251-149.900.
Foster Wheeler Energy Corporation: *See*—
Schroeder, Joseph W., 4,494,392, Cl. 72-56.000.
Fox, Peter F.: *See*—
Parks, John R.; Carr, David R.; and Fox, Peter F., 4,495,644, Cl. 382-3.000.
Framatome: *See*—
Coussau, Jean; and Clar, Georges, 4,494,907, Cl. 414-749.000.
Frame, Warren C. Crosscut saw carriage. 4,494,429, Cl. 83-435.100.
France Bed Co., Ltd.: *See*—
Masuda, Teruo; and Yamaguchi, Kazuyuki, 4,494,532, Cl. 128-71.000.
Franchini, Ivan: *See*—
Grilli, Walter; De Meo, Franco; and Franchini, Ivan, 4,495,004, Cl. 148-16.500.
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Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.
Franklin, Robert W.; and Briscoe, Peter F., to International Standard Electric Corporation. Method of manufacturing solid electrolytic capacitors. 4,494,299, Cl. 29-570.000.
FranRica Mfg. Inc.: *See*—
Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.
Framz, John E., to Monsanto Co. Esters of N-phosphonomethylglycine. 4,495,363, Cl. 560-155.000.
Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See*—
Koschke, Peter; and Novak, Pavel, 4,494,411, Cl. 73-724.000.
Fredd, Elmer H.: *See*—
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Fredley, C. Thomas. Brush cleaner and artist's kit. 4,494,267, Cl. 15-104.920.
Fredriksson, Boris: *See*—
Carlsson, Valdemar; and Fredriksson, Boris, 4,494,758, Cl. 277-14.00V.
Freedman, Larry A.: *See*—
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Freedman, Phillip A.: *See*—
Barrie, Andrew; and Freedman, Phillip A., 4,495,414, Cl. 250-288.000.
French, Charles R.: *See*—
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.
Frey, Douglas R. Adjustable distortion guitar amplifier. 4,495,640, Cl. 381-61.000.
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Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.
Frias, Ronald J.; Jagielski, David; and Schetter, Nicholas R., to Micron Corporation. Modular reader/printer developer apparatus. 4,494,859, Cl. 355-5.000.
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, to Kraftwerk Union Aktiengesellschaft, r Ruhr; and Grunzweig & Hartmann Montage GmbH. Heat-retarding closure system for pressure relief openings of partitions, in nuclear reactor buildings. 4,495,147, Cl. 376-283.000.
Friedman, Herman H.; and Popp, Walter R., to General Foods Corporation. Shelf-stable high moisture pet food. 4,495,208, Cl. 426-335.000.
Friedrich, John P.: *See*—
Christianson, Donald D.; and Friedrich, John P., 4,495,207, Cl. 426-312.000.
Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., to Bausch & Lomb Incorporated. Polysiloxane composition with improved surface wetting characteristics and biomedical devices made thereof. 4,495,361, Cl. 556-419.000.
Froeliger, Denis, to Societe d'Electronique Industrielle d'Elbeuf-Elindel. Broadcast receiver comprising an entirely electronic control device. 4,495,651, Cl. 455-158.000.
Frohberger, Paul-Ernst: *See*—
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.
Fu, Wallace Y., to Union Carbide Corporation. Process for making thiobiscarbamates. 4,495,093, Cl. 260-453.300.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, 4,495,579, Cl. 364-431.070.
Morikawa, Kouji; and Suzuki, Hitoshi, 4,494,493, Cl. 123-52.00M.
Sakakiyama, Ryuzo, 4,494,641, Cl. 192-0.076.
Takano, Toshio; and Sakakiyama, Ryuzo, 4,494,639, Cl. 192-0.052.
Fuji Photo Film Co., Ltd.: *See*—
Aoki, Haruo; and Terahata, Masahiro, 4,494,845, Cl. 354-297.000.
Arai, Yoshihiro; and Nahara, Akira, 4,495,242, Cl. 428-336.000.
Kogane, Mikio, 4,494,432, Cl. 83-559.000.
Takimoto, Masaaki; Saida, Takashi; and Murata, Masataka, 4,495,276, Cl. 430-527.000.
Tsubota, Motohiko; and Moriguchi, Masakazu, 4,495,270, Cl. 430-218.000.
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Yokoyama, Shigeki; and Ohga, Kunihiko, 4,495,275, Cl. 430-527.000.
Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Fujio; and Kurata, Masami, 4,495,507, Cl. 346-76.0PH.
Ozawa, Takashi, 4,495,523, Cl. 358-293.000.
Fujii, Hajime: *See*—
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.
Fujii, Isao: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.
Fujii, Toshifumi: *See*—
Uchida, Ryohei; and Fujii, Toshifumi, 4,495,525, Cl. 360-10.300.
Fujimura, Kazutoshi: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, to Canon Kabushiki Kaisha. Light shading device for a camera. 4,494,844, Cl. 354-241.000.
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, to Nippon Steel Corporation. Continuous heat treatment furnace. 4,494,929, Cl. 432-59.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,495,182, Cl. 514-226.000.
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, to Yamasa Shoyu Kabushiki Kaisha. Optically-active diamide derivatives. 4,495,355, Cl. 546-209.000.
Fujita, Kazuo. Castor wheel carriage. 4,494,464, Cl. 105-170.000.
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, to Japan Storage Battery Company Limited. Galvanic cell type oxygen sensor. 4,495,051, Cl. 204-408.000.
Fujitsu Fanuc Limited: *See*—
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.
Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, 4,495,464, Cl. 324-174.000.
Fujitsu Limited: *See*—
Kato, Takashi; and Toyokura, Nobuo, 4,495,219, Cl. 427-82.000.
Minami, Takatoshi; and Nishimoto, Hiroshi, 4,495,410, Cl. 250-214.0AG.
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, to Nippon Soken, Inc. Ventilating device for automotive vehicle. 4,494,597, Cl. 165-41.000.
Fukuda, Kumio: *See*—
Shimoma, Taketoshi; Fukuda, Kumio; and Shimaoogi, Toshio, 4,495,439, Cl. 313-412.000.
Fukuda, Yutaka: *See*—
Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, 4,495,535, Cl. 360-96.300.
Fukui, Osamu, to Nissan Motor Company, Limited. Tiltable steering for industrial vehicle or the like. 4,494,773, Cl. 280-775.000.
Fukumi, Hiroshi: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.
Fukuroi, Takeo; Omori, Shigenori; and Tanaka, Akira, to Yoshida Kogyo K. K. Apparatus for stamping filamentary material for helically coiled slide-fastener coupling elements. 4,494,922, Cl. 425-324.100.
Fukushima, Takashi: *See*—
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Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. Actuator control system for an engine idling speed governor. 4,495,579, Cl. 364-431.070.
Fuller Company: *See*—
Lukacz, Stephen A., 4,494,564, Cl. 137-527.600.
Funk, James E., to Alfred University Research Foundation, Inc. Coal-water slurry and method for its preparation. 4,494,959, Cl. 44-51.000.
Funke, Maurice F.; and Morris, Joseph W., to United States of America, Army, by said Joseph W. Morris. Fluidic transmission controller. 4,494,422, Cl. 74-867.000.
Furukawa, James N.: *See*—
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.
Furukawa, Masamichi: *See*—
Yamaga, Shigeru; and Furukawa, Masamichi, 4,494,854, Cl. 354-484.000.
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Tandem-type brake booster. 4,494,445, Cl. 91-369.00A.
Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., to Nauchno-Proizvodstveno Predpriyatie "Balkan". Device for pulse dosage of liquid microsamples into the flame of atom absorption spectrophotometer. 4,494,871, Cl. 356-315.000.
Fyfe, Donald W.: *See*—
Wurst, William C.; and Fyfe, Donald W., 4,494,526, Cl. 126-419.000.

G. D. Searle & Co.: *See*—
Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., 4,495,178, Cl. 514-17.000.
Nysted, Leonard N., 4,495,102, Cl. 260-239.500.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., to Xerox Corporation. Geometric design reproducing apparatus. 4,494,858, Cl. 355-3.0TR.
Gagnon, Bertrand. Record removal and centering device for 45 r.p.m. device. 4,495,613, Cl. 369-270.000.
Gailey, J. Lynn, to Alcan Aluminum Corporation. Ceiling system and panel-securing device therefor. 4,494,346, Cl. 52-489.000.
Gaines, Henry F. "Automatic set" mole trap. 4,494,335, Cl. 43-80.000.
Gainey, Michael D. Foldable ski and pole carrier. 4,494,787, Cl. 294-147.000.
Gajewski, Robert P.: *See*—
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.
Galanis, Andreas I.: *See*—
Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., 4,494,406, Cl. 73-204.000.
Galie, Louis M.: *See*—
Dickinson, Robert V.; and Galie, Louis M., 4,495,566, Cl. 364-200.000.
Gallagher, William: *See*—
McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, 4,494,766, Cl. 280-444.000.
Gamma-Metrics: *See*—
Lingren, Clinton L.; and Miller, James F., 4,495,144, Cl. 376-255.000.
Garcea, Giampaolo: *See*—
Surace, Filippo; and Garcea, Giampaolo, 4,494,761, Cl. 277-67.000.
Garneau, Richard P.: *See*—
Perlin, Morton J.; and Garneau, Richard P., 4,494,271, Cl. 16-21.000.
Garrison, Harold K.: *See*—
Hill, Amos G.; and Garrison, Harold K., 4,494,904, Cl. 414-491.000.
Gas Research Institute: *See*—
Kendall, Robert M.; and Schreiber, Richard J., 4,494,485, Cl. 122-250.00R.
Gaspar, Richard A.: *See*—
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.
Gates Rubber Company, The: *See*—
Uba, Toshio, 4,495,259, Cl. 429-161.000.
Gaudet, Arthur D.: *See*—
Lewis, John R.; McCurdy, Andrew; and Gaudet, Arthur D., 4,494,821, Cl. 350-6.500.
Gearhart Industries, Inc.: *See*—
Pratt, Donna K.; and Terrell, Jamie B., 4,494,601, Cl. 166-55.000.
Geberth, John D., Jr. Spray control valve. 4,494,697, Cl. 239-124.000.
Gebrian, Peter L.; and Jones, Charles B., to Du Pont de Nemours, E. I., and Company. Laminating and trimming process. 4,495,014, Cl. 156-80.000.
Gebrueder Heller Maschinenfabrik GmbH: *See*—
Schmid, Karlheinz, 4,494,281, Cl. 29-6.000.
Gehri, Aime A., to Exxon Nuclear Company, Inc. Spherical nuclear fuel loading probe. 4,495,145, Cl. 376-261.000.
Geipel, Stanley W., to Hickory Pond Corp. Gasket and gasket manufacturing method. 4,494,762, Cl. 277-206.00R.
Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, to Hoechst Aktiengesellschaft. Radiation polymerizable mixture and copying material produced therefrom. 4,495,271, Cl. 430-277.000.
Geist, Michael; and Diefenbach, Horst, to BASF Farben & Fasern AG. Self-crosslinking heat-curable binder. 4,495,335, Cl. 525-438.000.
Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., to International Business Machines Corporation. Optimization of an organization of many discrete elements. 4,495,559, Cl. 364-148.000.
Gell, Harold A., Jr. Coffee roaster. 4,494,314, Cl. 34-10.000.
General Binding Corporation: *See*—
Vercillo, Alfredo J.; and Kuehn, Arthur, 4,495,456, Cl. 318-755.000.
General Dynamics, Pomona Division: *See*—
Maudal, Inge, 4,494,460, Cl. 102-293.000.
General Electric Company: *See*—
Anthony, Blair T., 4,495,360, Cl. 556-436.000.
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.
Black, Kenneth G.; and McElhenny, Stuart W., 4,495,449, Cl. 318-60.000.
Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.
Cath, Pieter G.; Capp, John; and Loeffler, William P., 4,495,558, Cl. 364-563.000.
Chung, Rack H., deceased; and Chung, Betsy A., executrix, 4,495,330, Cl. 524-783.000.
Chung, Rack H., deceased, 4,495,331, Cl. 524-783.000.
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Cohen, Peter I., 4,495,251, Cl. 428-548.000.
Kresge, James S., 4,495,459, Cl. 324-72.000.
Leslie, Samuel A., 4,495,652, Cl. 455-234.000.
Milkovic, Miran, 4,495,463, Cl. 324-142.000.
Philipp, Herbert R., 4,495,482, Cl. 338-21.000.
Sawyer, Quentan T., 4,494,439, Cl. 89-12.000.
Smith, Peter H., 4,495,485, Cl. 340-365.00C.
Timoshenko, John A.; and Bergh, Daniel D., 4,495,381, Cl. 174-178.000.
Turney, Stephen D., 4,495,445, Cl. 315-169.100.
White, Dwain M., 4,495,333, Cl. 525-150.000.
Ziemba, Richard T., 4,494,459, Cl. 102-235.000.
General Foods Corporation: *See*—
Brander, Rita W.; and Raap, Teresa A., 4,495,205, Cl. 426-104.000.
Friedman, Herman H.; and Popp, Walter R., 4,495,208, Cl. 426-335.000.
General Signal Corporation: *See*—
Davis, Duane J., 4,494,911, Cl. 417-222.000.
Sibley, Henry C.; and Rutherford, David B., Jr., 4,495,578, Cl. 364-426.000.
George, David J.; Nguyen, Hue V.; and Yardy, Raymond, to Discovision Associates. Digital data storage in video format. 4,495,623, Cl. 371-38.000.
George, John A., to Xomox Corporation. Plug valve with improved plastic sleeve. 4,494,730, Cl. 251-309.000.
Georgia-Pacific Resins, Inc.: *See*—
Blair, Robert E.; and Peede, Michael R., 4,495,329, Cl. 524-774.000.
Gerald, Dumay: *See*—
Gilbert, Takats; and Gerald, Dumay, 4,495,568, Cl. 364-200.000.
Gerber Garment Technology, Inc.: *See*—
Gerber, Heinz J., 4,494,433, Cl. 83-374.000.
Gerber, Heinz J., to Gerber Garment Technology, Inc. Apparatus for working on sheet material and having movable vacuum chamber. 4,494,433, Cl. 83-374.000.
Gerland S.A.: *See*—
Berenger, Daniel, 4,495,012, Cl. 156-78.000.
Gesing, Adam J.; and Dewing, Ernest W., to Alcan International Limited. Electrolytic reduction cells. 4,495,047, Cl. 204-245.000.
Geyken, Erwin: *See*—
Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, 4,494,706, Cl. 242-65.000.
GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See*—
Blaimschein, Gottfried, 4,494,280, Cl. 29-6.000.
Gharachorloo, Nader. On-line character recognition using closed-loop detector. 4,495,646, Cl. 382-13.000.
Gheri, Aime A., to Exxon Nuclear Company, Inc. Spherical nuclear fuel loading system. 4,495,146, Cl. 376-261.000.
Giachetti, Ettore: *See*—
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.
Gianturco, Cesare, to Cook, Incorporated. Expandable blood clot filter. 4,494,531, Cl. 128-1.00R.
Gibson, Kirk R., to Chevron Research Company. Two-region spherical catalysts. 4,495,308, Cl. 502-355.000.
Gibson, Lawrence: *See*—
Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., 4,494,574, Cl. 137-625.600.
Giger, Adolf J., to AT&T Bell Laboratories. Transmitter power control circuit. 4,495,648, Cl. 455-73.000.
Giglia, Robert D., to American Cyanamid Company. Filter paper. 4,495,030, Cl. 162-145.000.
Gilbert, Michael A.: *See*—
Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., 4,495,504, Cl. 343-779.000.
Gilbert, Takats; and Gerald, Dumay, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Apparatus for the control and monitoring of power supply sources for data processing systems. 4,495,568, Cl. 364-200.000.
Gilliam, John E., to U.S. Philips Corporation. Waveform crossing detector. 4,495,461, Cl. 324-86.000.
Gisvold, Lee D.: *See*—
DeHaan, Robert; and Gisvold, Lee D., 4,494,598, Cl. 165-47.000.
Gitman, Grigory M., to Cadre Corporation, The. Centralized ladle heating and drying system. 4,494,927, Cl. 432-9.000.
Gladstone, Robert S., to Coopers Filters Limited. Gravity dump valve. 4,494,575, Cl. 137-846.000.
Glass, Samuel W.: *See*—
Lubin, David; Connor, Larry W.; and Glass, Samuel W., 4,495,383, Cl. 179-100.00L.
Glockner, Gary: *See*—
Sinclair, Franklin H.; and Glockner, Gary, 4,494,565, Cl. 137-555.000.
Sinclair, Franklin H.; and Glockner, Gary, 4,494,566, Cl. 137-556.000.
GNS Gesellschaft fur Nuklear-Service mbH: *See*—
Janberg, Klaus G.; and Methling, Dieter, 4,495,139, Cl. 376-203.000.
Godwin, Paul K., Jr.; and Kell, Howard A., Jr., to Ford Motor Company. Tape deck with non-contacting unidirectional rotation sensor configured to prevent capstan tape windup. 4,494,712, Cl. 242-191.000.
Goetz, Norbert: *See*—
Eicken, Karl; Goetz, Norbert; and Wuerzer, Bruno, 4,494,983, Cl. 71-118.000.
Golden Team Sportartikel GmbH: *See*—
Klagmann, Josef, 4,494,322, Cl. 36-28.000.
Goldstein, Theodore P., to Mobil Oil Corporation. Photochemical process using shape-selective photoassisted heterogenous catalyst compositions. 4,495,041, Cl. 204-158.00R.
Goldsworthy Engineering, Inc.: *See*—
Goldsworthy, William B., 4,495,021, Cl. 156-425.000.

Goldsworthy, William B., to Goldsworthy Engineering, Inc. Apparatus for producing fiber reinforced plastic sheet structures. 4,495,021, Cl. 156-425.000.

Gollasch, Bernd: *See—*
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

Gonzalez-Oliver, Carlos J. R.: *See—*
Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., 4,495,297, Cl. 501-12.000.

Good, Allen H. Facial skin cleanser capable of softening and removing sebum plaque. 4,495,079, Cl. 252-106.000.

Goodman, Harry: *See—*
Engelstein, Charles; Kassel, David L.; and Goodman, Harry, 4,495,257, Cl. 429-100.000.

Goodyear Tire & Rubber Company, The: *See—*
Deeken, William O.; and Davis, Charles L., 4,495,126, Cl. 264-137.000.

Gorb, Vyacheslav F.: *See—*
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.

Gordon, Marvin, to Whitman Medical Corporation. Isolation of forestream and midstream portions of collected urine samples. 4,494,581, Cl. 141-1.000.

Goshima, Takahiro: *See—*
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,495,182, Cl. 514-226.000.

Goto, Masahiro: *See—*
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.

Goto, Satoshi: *See—*
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Gotoda, Yusuke; and Yoshimura, Toshimitsu, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission system for vehicles. 4,494,637, Cl. 192-48.400.

Gottlieb, Mark P. Breathing apparatus for supplying fluid to a user on demand. 4,494,537, Cl. 128-204.260.

Gould, Russell J.: *See—*
Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., 4,495,124, Cl. 264-130.000.

Gouya, Takao: *See—*
Konishi, Hideo; Matsuoka, Kazunori; and Gouya, Takao, 4,495,650, Cl. 455-144.000.

Graef, Harry T.; and Newton, Kevin H., to Diebold, Incorporated. Paper currency dispenser friction picker mechanism. 4,494,747, Cl. 271-263.000.

Graf, Michael, to Mannesmann Aktiengesellschaft. Process for making fine-grain weldable steel sheet for large-diameter pipes. 4,494,999, Cl. 148-2.000.

Graff, Henry W., to Cal Custom Accessories, Inc. Forward shining vehicle lamp. 4,495,552, Cl. 362-297.000.

Graham, Blanche D.: *See—*
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., 4,495,286, Cl. 435-253.000.

Graham Magnetics Incorporated: *See—*
Rainey, Charles E., Jr., 4,494,878, Cl. 366-341.000.

Graham, Marshall D.: *See—*
Drury, F. Robert; and Graham, Marshall D., 4,494,479, Cl. 118-120.000.

Grainge, Richard W.; and Slow, Dennis, to British Aerospace Public Limited Company. Mounting assembly for optical elements. 4,494,830, Cl. 350-486.000.

Gramm, Gunther: *See—*
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Gramm, Jeffrey S.; Mongan, Edwin L., Jr.; and Sheeran, Patrick J., to Du Pont de Nemours, E. I., and Company. Process for preparing dialkyl propanediimidate dihydrohalides. 4,495,108, Cl. 260-453.700.

Grandvallet, Gilles; and Deborde, Albert H., to Saurer Diederichs Societe Anonyme. Thread clamp, particularly for jet looms. 4,494,579, Cl. 139-429.000.

Grapha-Holding AG: *See—*
Linder, Heinz, 4,494,705, Cl. 242-59.000.

Graphic Controls Corporation: *See—*
Lawton, William R., 4,495,291, Cl. 436-1.000.

Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG: *See—*
Schramm, Peter; and Feulner, Walter, 4,494,875, Cl. 356-402.000.

Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., to Standard Oil Company, The. Production of unsaturated nitriles using catalysts promoted with various metals. 4,495,109, Cl. 260-465.300.

Gravi-Mechanics Co.: *See—*
Dedolph, Richard R., 4,495,310, Cl. 521-99.000.

Gray, Robert A., to Robert Alan Gray Ltd. Easy access knife holder. 4,494,309, Cl. 30-151.000.

Great Lakes Carbon Corporation: *See—*
Secrist, Duane R.; and Clark, James M., 4,495,049, Cl. 204-292.000.

Green, David; and Blanc, Maurice, to Societe D'Assistance Technique Pour Produits Nestle S.A. Caffeine adsorption. 4,495,210, Cl. 426-422.000.

Greenley, Gordon A.: *See—*
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.

Greenwood, Walter, Jr., to Wisne Automation & Engineering Co. Accumulating conveyor. 4,494,649, Cl. 198-718.000.

Gregory, Jack; and Landry, Christian C., to Digital Equipment Corporation. Tilt swivel base. 4,494,720, Cl. 248-371.000.

Gretz, Charles, to Life-Like Products, Inc. Model aircraft. 4,494,940, Cl. 446-61.000.

Grieves, Colin G.: *See—*
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.

Griffin, Jim B.: *See—*
Ford, Michael B.; and Griffin, Jim B., 4,494,607, Cl. 166-311.000.

Griffith, John M., to Coburn Optical Industries, Inc. Lens tray. 4,494,667, Cl. 220-19.000.

Grilli, Walter; De Meo, Franco; and Franchini, Ivan, to Italtractor ITM SpA. Process for high-temperature carburizing treatment of track bushes for tractors or tracked vehicles. 4,495,004, Cl. 148-16.500.

Grimes, Fred K., to Lance Austin Enterprises, Inc. Fixture support installation method. 4,494,296, Cl. 29-432.000.

Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, to Societe Anonyme dite: L'OREAL. Anhydrous composition, stable to oxidation, based on anthralin or one of its derivatives, in a carrier consisting of a fatty acid alkyl ester and a thickener, and its use in the treatment of skin diseases. 4,495,203, Cl. 514-732.000.

Gross, Kenny C.; and Laug, Matthew T., to United States of America, Energy. Gas tagging and cover gas combination for nuclear reactor. 4,495,143, Cl. 376-251.000.

Grudkowski, Thomas W., to United Technologies Corporation. Low reflectivity surface-mounted electrodes on semiconductor saw devices. 4,495,431, Cl. 310-313.00B.

Grunwald, Werner: *See—*
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.

Grunzweig & Hartmann Montage GmbH: *See—*
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

GTE Communication Products Corporation: *See—*
Magee, Mark R.; and James, Richard D., 4,495,541, Cl. 361-225.000.

GTE Laboratories Incorporated: *See—*
Klinedinst, Keith A.; and Schlaikjer, Carl R., 4,495,266, Cl. 429-105.000.
Proud, Joseph M.; and Lapatovich, Walter P., 4,495,435, Cl. 313-231.310.

GTE Products Corporation: *See—*
Faria, Sixdeniel, 4,495,265, Cl. 430-95.000.
Ritsko, Joseph E.; and Acla, Howard L., 4,495,158, Cl. 423-65.000.
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.

Guala, Piergiacomo, to Angelo Guala, S.p.A. Tamper evident closure. 4,494,664, Cl. 215-252.000.

Gude, Klaus E.: *See—*
Jons, Ebbe S.; and Gude, Klaus E., 4,495,162, Cl. 423-171.000.

Guenther, Kenneth L.; and Zemke, Edward H., to Bell & Howell Company. Inserter with improved media transport having pivotal spring biased sheet hold-downs adjacent transport belt. 4,494,742, Cl. 270-58.000.

Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, to Ato Chimie. Hemiesters of phosphonic acids. 4,495,111, Cl. 260-932.000.

Gugel, Ernst: *See—*
Leimer, Gerhard; and Gugel, Ernst, 4,495,122, Cl. 264-65.000.

Guidicelli, Charles, to Societe Anonyme D.B.A. Device for fixing a flexible conduit to a panel. 4,494,719, Cl. 248-27.100.

Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Oxy-fuel burners. 4,494,923, Cl. 431-9.000.

Guipont, Raymond: *See—*
De Conto, Pierre; and Guipont, Raymond, 4,495,633, Cl. 378-55.000.

Gulbins, Erich: *See—*
Schenck. Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.

Gulf Oil Corporation: *See—*
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.

Gumplo, Eugene L.: *See—*
Stubbs, James A.; and Gumplo, Eugene L., 4,494,708, Cl. 242-67.30R.

Gunther, Arthur G.; Willsie, Douglas H.; and Hawkins, Leo D., to Pizza Hut, Inc. Salad bar insert. 4,494,654, Cl. 206-562.000.

Gurza, Guillermo R. Method of purification of phosphoric acid. 4,495,165, Cl. 423-321.00R.

Gustafson, Roy W., to Digital Equipment Corporation. Qualifier circuit. 4,495,529, Cl. 360-46.000.

Gustin, Pol A. G. J.: *See—*
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.

Guth, Christian: *See—*
Abel, Heinz; and Guth, Christian, 4,494,952, Cl. 8-125.000.

Guttmann, Friedrich W., to Klockner-Humboldt-Deutz AG. Device for generating a convective reaction system between a reaction agent and a molten bath. 4,494,736, Cl. 266-265.000.

Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, to Hewlett-Packard Company. Logic state analyzer with sequential triggering and restart. 4,495,599, Cl. 364-900.000.

Haantera, Antti I., to Valmet Oy. Method and apparatus for supporting lighters in lighter-transport ships. 4,494,476, Cl. 114-260.000.

Haar, Lucas H.: *See*—
Stoka, Roberto; and Haar, Lucas H., 4,494,630, Cl. 188-71.800.

Habermehl, Fred M.: *See*—
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., 4,494,481, Cl. 119-1.000.

Hackler, Ronald E.: *See*—
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,495,195, Cl. 514-406.000.

Haden Schweitzer Corporation: *See*—
Bradshaw, Norman F., 4,494,596, Cl. 165-20.000.

Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., to Astra Lakemedel Aktiebolag. Derivatives of guanine for combating herpes virus infections. 4,495,190, Cl. 514-262.000.

Hagimoto, Yosio: *See*—
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.

Hagiwara, Michiaki; and Tomohiro, Yoshitaka, to Unitika, Ltd. Method and apparatus for filtration using ferromagnetic metal fibers. 4,495,074, Cl. 210-695.000.

Hagiwara, Tsuneo: *See*—
Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, 4,495,343, Cl. 528-292.000.

Hagyuda, Nobuyoshi: *See*—
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.

Hahn, Michael; and Sperber, Franz, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung. Large surface structural component, especially rotor blade. 4,494,910, Cl. 416-226.000.

Haig, Armen C. Hip nail. 4,494,535, Cl. 128-92.0BA.

Haiges, Frank, to Suevia Haiges GmbH & Co. Container for the receiving and dispensing of animal rearing and feeding materials, particularly for watering young animals. 4,494,483, Cl. 119-77.000.

Halfon, Marc: *See*—
Dodge, William B.; and Halfon, Marc, 4,495,107, Cl. 260-453.00P.

Halkey-Roberts Corporation: *See*—
Foltz, Carl L., 4,495,551, Cl. 362-205.000.

Hall, Wilbur L.: *See*—
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.

Haller, Andreas: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Halliburton Company: *See*—
Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.

Hamada, Masa: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.

Hamada, Masanori, to Clarion Co., Ltd. Diversity receiver. 4,495,653, Cl. 455-277.000.

Hamano, Hiroaki: *See*—
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.

Hamano, Isao, to Mitsubishi Denki Kabushiki Kaisha. Starter with a planetary gear reduction facilities. 4,494,414, Cl. 74-7.00E.

Hamashima, Toyoji: *See*—
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.

Hamersley, Richard A.: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Hamid, Michael; and Lionis, Anastasios, to United States of America, Navy. Polyconductor device for laser beam detection and protection. 4,494,835, Cl. 351-158.000.

Hamilton, William A.: *See*—
Seltzer, Edward; and Hamilton, William A., 4,495,214, Cl. 426-557.000.

Handi-Pac, Inc.: *See*—
Klawitter, Ronald R., 4,494,820, Cl. 350-4.100.

Handy, Richard L.: *See*—
Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., 4,494,694, Cl. 238-2.000.

Hansen, Craig C.: *See*—
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.

Hansen, Craig N., to Hansen Engine Corporation. Rotary valve assembly. 4,494,500, Cl. 123-190.00E.

Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., to G. D. Searle & Co. Enkephalin analogs. 4,495,178, Cl. 514-17.000.

Hansen Engine Corporation: *See*—
Hansen, Craig N., 4,494,500, Cl. 123-190.00E.

Hansen, Robert S. Holding device for pencils and the like. 4,494,660, Cl. 211-69.100.

Hansson, Erik. Glove. 4,494,249, Cl. 2-161.00R.

Harada, Atsushi: *See*—
Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, 4,494,490, Cl. 123-41.560.

Harada, Tosiharu: *See*—
Okuda, Yosiro; and Harada, Tosiharu, 4,495,164, Cl. 423-266.000.

Harakawa, Masaji: *See*—
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saegusa, Kunio; and Yamagiwa, Masao, 4,495,121, Cl. 264-56.000.

Hardesty, Edwin C.: *See*—
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.

Hardigg Industries, Inc.: *See*—
Hardigg, James S.; and Turner, E. Wayne, 4,495,260, Cl. 429-180.000.

Hardigg, James S.; and Turner, E. Wayne, to Hardigg Industries, Inc. Sliding seal lead bushing. 4,495,260, Cl. 429-180.000.

Hardy, Raymond D. Testing tool for studs and the like. 4,494,412, Cl. 73-761.000.

Hargreaves, Rodney B.: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.

Harguindey, Julian E., to UOP Inc. Wire mesh well screen with welded wire support. 4,494,603, Cl. 166-231.000.

Harmer, Alan L.: *See*—
Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., 4,495,297, Cl. 501-12.000.

Harper, Truck, Inc.: *See*—
Ast, Dale A., 4,494,626, Cl. 182-20.000.

Harris Corporation: *See*—
Laude, David P., 4,495,537, Cl. 361-98.000.
Stoverock, Paul H., 4,495,547, Cl. 361-400.000.

Harris Graphics Corporation: *See*—
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.
Punater, Dinesh G., 4,495,583, Cl. 364-471.000.

Harris, Harry A., to Ash Grove Cement Company. Cementitious composition. 4,494,990, Cl. 106-90.000.

Harris, Michael J.; and Livingston, Kenneth N. Reel brake apparatus. 4,494,710, Cl. 242-156.000.

Harrison Western Corporation: *See*—
Snyder, Larry L., 4,494,617, Cl. 175-86.000.
Snyder, Larry L., 4,494,799, Cl. 299-31.000.

Harrysson, Goran: *See*—
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, 4,495,016, Cl. 156-152.000.

Hart, Ernest D. Instrument for extracting splinters. 4,494,543, Cl. 128-354.000.

Hartwell Corporation: *See*—
Poe, L. Richard, 4,494,783, Cl. 292-155.000.

Hartz, Peter: *See*—
Ehrhardt, Heinz; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,495,191, Cl. 514-383.000.

Hartzell, John C. Punch with removable blade. 4,494,426, Cl. 83-164.000.

Harvey, Peter, to BICC Public Limited Company. Overhead electric and optical transmission systems. 4,494,822, Cl. 350-96.210.

Hasagawa, Shumpei: *See*—
Kishi, Noriyuki; and Hasagawa, Shumpei, 4,494,512, Cl. 123-489.000.

Hasegawa, Hiroshi: *See*—
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.

Hasegawa, Mitsuru: *See*—
Honda, Hiroshi; and Hasegawa, Mitsuru, 4,494,888, Cl. 139-435.000.

Hasegawa, Takashi: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.

Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,494,703, Cl. 242-55.19A.

Hashimoto, Kazuo, to Hashimoto Corporation. Endless tape cassette. 4,494,703, Cl. 242-55.19A.

Hashimoto, Osamu: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.

Hashimoto, Shinichi: *See*—
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, 4,494,857, Cl. 355-3.0CH.

Hashimoto, Shunichi; and Ohno, Katsutoshi, to Sony Corporation. Phosphor. 4,495,085, Cl. 252-301.40F.

Hashimoto, Tamotsu: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.

Hashimoto, Toyokazu: *See*—
Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, 4,495,595, Cl. 364-900.000.

Hashimoto, Yasuyuki, to Kabushiki Kaisha Daikin Seisakusho. Clutch disc. 4,494,642, Cl. 192-106.200.

Haskell, Jacob D., to Advanced Micro Devices, Inc. Process for forming grooves having different depths using a single masking step. 4,495,025, Cl. 156-648.000.

Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, to Sekisui

Kagaku Kogyo Kabushiki Kaisha. Resin composition suitable for use in medical devices. 4,495,312, Cl. 523-105.000.

Hatada, Kenzo; and Kitahiro, Isamu, to Matsushita Electric Industrial Co., Ltd. Method of connecting metal leads with electrodes of semiconductor device and metal lead therefore. 4,494,688, Cl. 228-180.00A.

Hatakeyama, Yoshiharu; and Teshima, Kenzo, to Yoshida Industry Co., Ltd. Method for forming a synthetic-resin-made container. 4,495,125, Cl. 264-132.000.

Hatta, Takao: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.

Hattori, Hiroyuki: *See*—
Tachika, Tetsuji; Sakamaki, Hisashi; and Hattori, Hiroyuki, 4,494,861, Cl. 355-14.00R.

Hattori, Nobuoto: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Ameniya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Hattori, Yoshiyuki: *See*—
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.

Hauer, Jean-Claude; and Oger, Jacques, to Pont-A-Mousson S.A. Grating for a highway construction in particular for a sewer opening. 4,494,891, Cl. 404-4.000.

Haunold, Otto: *See*—
Cook, William E.; Vodian, Morton A.; and Haunold, Otto, 4,495,150, Cl. 422-99.000.

Hausler, Rudolf H.; and Thompson, Neil E. S., to Petrólite Corporation. Mercapto-polycarboxylic acids. 4,495,336, Cl. 252-8.55E.

Hawkins, Leo D.: *See*—
Gunther, Arthur G.; Willsie, Douglas H.; and Hawkins, Leo D., 4,494,654, Cl. 206-562.000.

Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Intake system for an internal combustion engine. 4,494,506, Cl. 123-348.000.

Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Photo-curable epoxy resin composition. 4,495,042, Cl. 204-159.140.

Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, to Sanyo Electric Co., Ltd. Washing machine. 4,494,390, Cl. 68-23.700.

Hayashi, Mikio: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.

Hayashi, Tsutomu, to Honda Giken Kogyo Kabushiki Kaisha. Interlock braking system for motorcycles. 4,494,800, Cl. 303-6.00A.

Haynes, Charles W. Vehicle light assembly. 4,495,553, Cl. 362-311.000.

Haynes, Harvey H. Door-stop for the handicapped. 4,494,784, Cl. 292-233.000.

Heath, Roger L., to R2 Corporation. Physiological monitoring electrode system. 4,494,552, Cl. 128-696.000.

Heberlein, Joachim V. R.; and Fey, Maurice G., to Westinghouse Electric Corp. Magnetic field stabilized transferred arc furnace. 4,495,625, Cl. 373-107.000.

Hedrick, Paul A., to Essex Group, Inc. Method of molding an electrical connector. 4,495,130, Cl. 264-255.000.

Hein, Carl C.: *See*—
Wagner, John R., Jr.; and Hein, Carl C., 4,495,027, Cl. 156-244.110.

Heinrich, Emil: *See*—
Sarnes, Reiner; and Heinrich, Emil, 4,495,148, Cl. 419-57.000.

Heinz, Rudolf: *See*—
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.

Held, Kurt. Device for supporting press belts or roller-supported double belt presses. 4,494,648, Cl. 198-500.000.

Helix Technology Corporation: *See*—
Lessard, Philip A., 4,494,381, Cl. 62-55.500.

Henderson, David M.: *See*—
Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.

Hendrickson, Thomas E.: *See*—
Roberts, Jon A.; and Hendrickson, Thomas E., 4,495,385, Cl. 179-111.00R.

Hengartner, Urs O.: *See*—
Coffen, David L.; and Hengartner, Urs O., 4,495,354, Cl. 546-146.000.

Hengesbach, Robert W. Adjustable spray nozzle. 4,494,699, Cl. 239-499.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, 4,495,092, Cl. 252-559.000.

Hennion, Jean-Claude: *See*—
Wattiez, Daniel; and Hennion, Jean-Claude, 4,494,264, Cl. 8-150.000.

Henshaw, Leslie J.: *See*—
Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., 4,495,200, Cl. 424-286.000.

Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Catalyst and support, their methods of preparation, and processes employing same. 4,495,062, Cl. 208-111.000.

Hensley, Thomas E.; and Weaver, Richard D., to Allied Corporation. Fuel injector. 4,494,701, Cl. 239-585.000.

Henson, Richard L. Slide arrangement. 4,494,802, Cl. 308-3.800.

Hentschel, Peter; Meyl, Wolfgang; and Seipelt, Egon, to Jenoptik Jena G.m.b.H. Arrangement for setting out points and straight lines. 4,494,870, Cl. 356-152.000.

Herberg, Helmut, to Siemens Aktiengesellschaft. Method for manufacturing metallized semiconductor components. 4,495,026, Cl. 156-652.000.

Herceg, Laurie S.: *See*—
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., 4,494,671, Cl. 220-256.000.

Herchenbach, Horst: *See*—
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,494,991, Cl. 106-100.000.

Hermann, Karl, to International Business Machines Corporation. Selective wiring for multilayer printed circuit board. 4,495,479, Cl. 333-238.000.

Hermecz, Istvan: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Balanced armature winding for motors. 4,495,430, Cl. 310-198.000.

Herring, Thomas M., to Christy Firebrick Company. Method of installing furnace wall lining. 4,494,295, Cl. 29-432.000.

Hershey, Robert E., to Swiss Aluminium Ltd. Apparatus for degassing molten metal. 4,494,735, Cl. 266-218.000.

Herwig, Walter: *See*—
Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, 4,495,271, Cl. 430-277.000.

Hessler, William D.: *See*—
Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., 4,494,574, Cl. 137-625.600.

Hessling, Heinz W.; and Weykam, Gottfried, to Weykam, Gottfried. Turning device. 4,494,645, Cl. 198-414.000.

Hesston Corporation: *See*—
Hill, Amos G.; and Garrison, Harold K., 4,494,904, Cl. 414-491.000.

Hewlett-Packard Company: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
Ware, Frederick A., 4,495,593, Cl. 364-757.000.
Zellmer, Joel A., 4,495,642, Cl. 382-1.000.

Hickey & Company Limited: *See*—
Hickey, John F., 4,494,451, Cl. 99-276.000.

Hickey, John F., to Hickey & Company Limited. Brewing apparatus. 4,494,451, Cl. 99-276.000.

Hickling, Colin D.; and Barnes, Marvin, to Trigometer, Inc. Thermostat with bimetal compensating element. 4,495,481, Cl. 337-349.000.

Hickory Pond Corp.: *See*—
Geipel, Stanley W., 4,494,762, Cl. 277-206.00R.

Hicks, Theodore A.: *See*—
Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., 4,494,373, Cl. 60-253.000.

Hiemstra, Bruce: *See*—
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, 4,494,795, Cl. 297-355.000.

Hietanen, Jukka: *See*—
Salmela, Jouko J.; Hietanen, Jukka; and Syrjanen, Timo, 4,494,480, Cl. 118-411.000.

Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., to Texas Instruments Incorporated. Carrier for integrated circuit. 4,495,376, Cl. 174-52.0FP.

Hill, Amos G.; and Garrison, Harold K., to Hesston Corporation. Self-unloading on-the-go forage hopper. 4,494,904, Cl. 414-491.000.

Hill, Geoffrey E.; and Woffinden, Duard S., to Hill, Geoffrey E. Automatic balloon launching system. 4,494,714, Cl. 244-98.000.

Hill, Jerry M., to FMC Corporation. Wheel balancer two plane calibration apparatus and method. 4,494,400, Cl. 73-1.00B.

Hill, William D.: *See*—
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.

Hilti Aktiengesellschaft: *See*—
Uhlig, Raimer, 4,494,347, Cl. 52-508.000.

Hilton-Davis Chemical Co., The: *See*—
Schmidt, Paul J.; and Hung, William M., 4,494,989, Cl. 106-21.000.

Himeno, Kiyoshi: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,494,957, Cl. 8-639.000.

Hippo, Edwin J.: *See*—
Comolli, Alfred G.; and Hippo, Edwin J., 4,495,055, Cl. 208-10.000.

Hirai, Seiichi; and Otsuka, Nobuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Constant velocity universal joint. 4,494,941, Cl. 464-145.000.

Hiraishi, Hideki, to O M Industrial Co., Ltd. Safety plastic filler neck cap. 4,494,673, Cl. 220-288.000.

Hirakata, Kaoru: *See*—
Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, 4,495,048, Cl. 204-267.000.

Hiramatsu, Akira: *See*—
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,495,432, Cl. 310-328.000.

Hirano, Hirofumi: *See*—
Watanabe, Satoshi; Wakasawa, Toru; Hirano, Hirofumi; and Nishizawa, Hiroshi, 4,494,885, Cl. 400-145.200.

Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, to Nissan Motor Company, Limited. Continuously variable V-belt transmission. 4,494,942, Cl. 474-28.000.

Hirano, Mitsunori: *See*—
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Hirano, Tsumoru: *See*—
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Hirayama, Kazuyoshi: *See*—
Nakamura, Takeshi; Okamoto, Seiji; and Hirayama, Kazuyoshi, 4,494,824, Cl. 350-334.000.
Hirayama, Yoshio: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.
Hirosawa, Yoshiaki: *See*—
Katayama, Hiroomi; and Hirosawa, Yoshiaki, 4,494,518, Cl. 123-612.000.
Hiroshima, Koichi; and Tada, Yoshinori, to Ransburg Japan, Limited. Method and apparatus for preparing emulsions. 4,495,086, Cl. 252-314.000.
Hirzel, Edgar A., to Crane Co. Aircraft ground velocity determination system. 4,495,589, Cl. 364-565.000.
Hitachi Automotive Engineering Co., Ltd.: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.
Hitachi, Ltd.: *See*—
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, 4,495,218, Cl. 427-53.100.
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,495,601, Cl. 365-1.000.
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.
Kitajima, Hiroyuki; and Ohmachi, Kazuhiko, 4,495,570, Cl. 364-200.000.
Nagai, Teruhisa; and Naito, Takemi, 4,494,288, Cl. 29-157.30A.
Nakayama, Tadakazu; Tsuruoka, Ryozo; and Matsumoto, Masaki, 4,495,142, Cl. 376-251.000.
Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, 4,495,595, Cl. 364-900.000.
Oosuga, Minoru; and Ohyama, Yoshishige, 4,494,405, Cl. 73-118.000.
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, 4,494,825, Cl. 350-343.000.
Shiibayashi, Masao, 4,494,914, Cl. 418-55.000.
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, 4,494,924, Cl. 431-78.000.
Yamaji, Eiichi; and Ohno, Yoshie, 4,495,562, Cl. 364-200.000.
Hoang, Tan; and Smiley, James B., to Tri-Star Enterprises, Inc. Pipe trough for transporting pipe between upper and lower positions. 4,494,899, Cl. 414-22.000.
Hobo, Nobuhito: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.
Hodgson, Victor F.: *See*—
Walker, Brian J.; and Hodgson, Victor F., 4,495,013, Cl. 156-79.000.
Hoechst Aktiengesellschaft: *See*—
Ehrhardt, Heinz; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,495,191, Cl. 514-383.000.
Geissler, Ulrich; Herwig, Walter; and Fetsch, Elisabeth, 4,495,271, Cl. 430-277.000.
Hoehn, Marvin M.; and Marconi, Gary G., to Eli Lilly and Company. A51568 Antibiotic and process for producing thereof. 4,495,179, Cl. 514-9.000.
Hoffman, Richard A., to Westinghouse Electric Corp. Protectively-coated gold-plated article of jewelry or wristwatch component. 4,495,254, Cl. 428-632.000.
Hoffmann, Alexander: *See*—
Pusch, Gunter; Hoffmann, Alexander; and Aisslinger, Dieter E., 4,495,239, Cl. 428-192.000.
Hoffmann-La Roche Inc.: *See*—
Coffen, David L.; and Hengartner, Urs O., 4,495,354, Cl. 546-146.000.
Hofstetter, Matthias, to Siemens-Albis AG. Bidirectional multi-mode data transfer bus system. 4,495,574, Cl. 364-200.000.
Hohensang, Lutz, to Mobil Oil Corporation. Device for the determination of the soot content of an oil sample. 4,495,417, Cl. 250-343.000.
Holder, Percy E. A. Fabu patient gown. 4,494,248, Cl. 2-69.000.
Hollandse Signaalapparaten B.V.: *See*—
Eikelboom, Lucas, 4,495,555, Cl. 323-28.000.
Hollaway, Gerald C.: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Hollenbeck, Dennis W.: *See*—
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.
Holmes, James M.: *See*—
Christie, George M.; and Holmes, James M., 4,494,962, Cl. 44-15.00D.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Gotoda, Yusuke; and Yoshimura, Toshimitsu, 4,494,637, Cl. 192-48.400.
Hayashi, Tsutomu, 4,494,800, Cl. 303-6.00A.
Hirai, Seiichi; and Otsuka, Nobuyuki, 4,494,941, Cl. 464-145.000.
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.
Katayama, Hiroomi; and Hirosawa, Yoshiaki, 4,494,518, Cl. 123-612.000.
Kishi, Noriyuki; and Hasagawa, Shumpei, 4,494,512, Cl. 123-489.000.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,494,623, Cl. 180-230.000.
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, 4,494,801, Cl. 303-92.000.
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.
Honda, Hiroshi; and Hasegawa, Mitsuru, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Weft inserting method and apparatus for an air jet loom. 4,494,888, Cl. 139-435.000.
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, to Mita Industrial Co., Ltd. Magnetic toner having improved humidity dependency. 4,495,267, Cl. 430-106.600.
Honda, Seiichirou: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Honda, Tadatoshi; and Hosono, Yoichi, to Mitsui Toatsu Chemicals, Incorporated. Process for preparing alkyl nitroacetates. 4,495,362, Cl. 560-20.000.
Honegger, Werner, to Ferag Ag. Method and apparatus for the long-term pressing of printed products especially newspapers. 4,494,359, Cl. 53-430.000.
Honegger, Werner, to Ferag Ag. Apparatus for loosening an imbricated formation of printed products or the like. 4,494,646, Cl. 198-459.000.
Honeywell Inc.: *See*—
Lambert, Willibrordus J. S., 4,494,544, Cl. 128-419.00D.
Roberts, Jon A.; and Hendrickson, Thomas E., 4,495,385, Cl. 179-111.00R.
Honeywell Information Systems Inc.: *See*—
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.
Honig, Ernst-August, to Volkswagenwerk Aktiengesellschaft. Hydraulic control device for an automatic transmission. 4,494,640, Cl. 192-0.052.
Honig, Michael: *See*—
de . Baan, Johannes J.; and Honig, Michael, 4,494,632, Cl. 188-269.000.
Hoover Universal, Inc.: *See*—
Blevins, Theodore J.; and Swiderski, Paul R., 4,494,258, Cl. 5-29.000.
Hopfensperger, Reinhold, to International Standard Electric Corporation. Tangential blower. 4,494,908, Cl. 415-206.000.
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., to International Business Machines Corporation. Word processor and display. 4,495,490, Cl. 340-709.000.
Horii, Tetsuo; and Kohno, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sorter with automatic removal mechanism. 4,494,655, Cl. 209-569.000.
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saegusa, Kunio; and Yamagiwa, Masao, to Sumitomo Chemical Company, Ltd. Process for producing inorganic fiber. 4,495,121, Cl. 264-56.000.
Horton, David J. Solar heating system for beehives and other enclosures. 4,494,528, Cl. 126-429.000.
Horvath, Agnes: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.
Horwitz, Christopher M., to Massachusetts Institute of Technology. Gas mixtures for aluminum etching. 4,495,090, Cl. 252-372.000.
Hoshide, Yasuo: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
Hosokawa, Seiya: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Hosono, Yoichi: *See*—
Honda, Tadatoshi; and Hosono, Yoichi, 4,495,362, Cl. 560-20.000.
Howard, Philip H., to International Cube Corporation. Low tack microsphere glue. 4,495,318, Cl. 524-375.000.
Howell, Dan M.: *See*—
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.
Howlett, Stephen P.: *See*—
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.
Hoxan Corporation: *See*—
Kuraoka, Yasuo; and Sakao, Nobuo, 4,494,385, Cl. 62-306.000.
Hoyt/Easton Archery Co.: *See*—
Quartino, Miguel A., 4,494,521, Cl. 124-24.00R.
HRI, Inc.: *See*—
Abrams, Lawrence M., 4,495,060, Cl. 208-48.00Q.
Comolli, Alfred G.; and Hippo, Edwin J., 4,495,055, Cl. 208-10.000.

Hsi-Shan, Chen, to Sun Longitude Corporation. Swinging door hinge assembly having a rolling member. 4,494,275, Cl. 16-314.000.
Huang, Chi-Hao. Feeder connector assembly for coaxial cable. 4,494,817, Cl. 339-177.00R.
Hudgin, Donald E.; and Zawadzki, Thomas, to Princeton Polymer Laboratories, Inc. Degradable hydrocarbon polymers. 4,495,311, Cl. 523-126.000.
Hudson Engineering Company: *See—*
Napolitano, Pellegrino E., 4,494,560, Cl. 137-117.000.
Huffman, Ronald E., to KV33 Corporation. Dental model base. 4,494,934, Cl. 433-213.000.
Hughes Aircraft Company: *See—*
Abel, Hal P., 4,495,253, Cl. 428-624.000.
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.
Landis, Abraham L., 4,495,342, Cl. 528-125.000.
Roth, John A.; and Roth, Lynette B., 4,495,510, Cl. 357-5.000.
Hughes, David W.: *See—*
Sutton, Tonja R.; and Hughes, David W., 4,495,309, Cl. 521-51.000.
Hull, Maury L., to University of California, The Regents of the. Apparatus for programmed release in ski bindings. 4,494,768, Cl. 280-612.000.
Humphrey Products Company: *See—*
Loveless, Stanley M., 4,494,572, Cl. 137-596.170.
Hung, William M.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,494,989, Cl. 106-21.000.
Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, to Elektroschmelzwerk Kempten GmbH. Dense shaped articles consisting of polycrystalline hexagonal boron nitride and process for their manufacture by isostatic hot pressing. 4,495,123, Cl. 264-69.000.
Hunt-Wesson Foods, Inc.: *See—*
Beckstrom, Ronald D.; and Anderson, Chester C., 4,494,682, Cl. 222-551.000.
Hunter, Arthur C.: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.
Hurco Manufacturing Co., Inc.: *See—*
Roch, Gerald V., 4,494,312, Cl. 33-170.000.
Huret et ses Fils: *See—*
Coue , Maurice E. L., 4,494,944, Cl. 474-82.000.
Hurwitz, Scott L., to Magnum Shielding Corp. Sheathing system for automotive or marine ignition wires. 4,494,520, Cl. 123-633.000.
Hutchins, Erle M.: *See—*
Brzostek, Melvin W.; Hardesty, Edwin C.; and Hutchins, Erle M., 4,494,815, Cl. 339-123.000.
Hutson, Donald G., to Cal Detect, Inc. Method of standardizing IR breath alcohol device. 4,495,418, Cl. 250-343.000.
Hutson, Floyd E., to Medical Designs, Inc. Universal leg brace system. 4,494,534, Cl. 128-80.00F.
Hydra-Rig, Incorporated: *See—*
Elliston, Thomas L., 4,494,415, Cl. 74-44.000
Hydra Systems International, Inc.: *See—*
Stevens, Frederick G., 4,494,328, Cl. 42-1.00A.
Hyodo, Kaneaki: *See—*
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.
IBG International: *See—*
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.
Ibuki, Hideaki: *See—*
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.
Ichihara, Kazuyoshi: *See—*
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, 4,494,825, Cl. 350-343.000.
Ichikawa, Masaru: *See—*
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, to Honda Giken Kogyo Kabushiki Kaisha. Jig table apparatus for a machine tool. 4,494,282, Cl. 29-33.00P.
Ideal School Supply Corporation: *See—*
Bautista, John; and Miller, Lawrence H., 4,494,430, Cl. 83-468.000.
Idelman, Lloyd B.: *See—*
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.
Idesawa, Isao, to Nisshin Kogyo Kabushiki Kaisha. Automatic braking-gap adjuster system for mechanical drum brakes. 4,494,633, Cl. 188-329.000.
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, to Mitsubishi Oil Company, Limited. Continuous process for the production of solvents for coal liquefaction. 4,495,089, Cl. 252-364.000.
Iida, Yoshikazu: *See—*
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.
Iijima, Kenzaburo, to Nippon Gakki Seizo Kabushiki Kaisha. Magnetic tape. 4,495,241, Cl. 428-328.000.
Iizuka, Gorou: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.
Iizuka, Yo: *See—*
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.
Ikami, Hideo, to Nippon Chemiphar Co., Ltd. Ceramic plates and method for the production thereof. 4,495,118, Cl. 264-25.000.
IKARUS Karosszeria es Jarmugyar: *See—*
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.
Ikeda Bussan Co., Ltd.: *See—*
Shimomura, Kenji, 4,495,120, Cl. 264-51.000.
Ikeda, Takao: *See—*
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.
Ikeda, Toshimitsu: *See—*
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,495,267, Cl. 430-106.600.
Ilitch, Michael, to Little Caesar Enterprises, Inc. Carryout food tray. 4,494,689, Cl. 229-30.000.
Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, to Takeda Chemical Industries, Ltd. Quinone carboxylic acids and ester derivatives. 4,495,104, Cl. 260-396.00R.
Imahori, Seiichi: *See—*
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Imai, Iwao: *See—*
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.
Imamura, Juichi: *See—*
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.
Imanishi, Masamichi: *See—*
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, 4,494,681, Cl. 222-485.000.
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, to Hitachi, Ltd.; and Mitsubishi Chemical Industries, Limited. Guest-host type liquid crystal composition and liquid crystal display device using the same. 4,495,083, Cl. 252-299.100.
Imazumi, Kikuo: *See—*
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.
Immell, Raymond G.: *See—*
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., 4,495,506, Cl. 343-909.000.
Immonen, Kari, to ASEA Aktiebolag. Tool for assembly of halves of a valve stem key for retaining valve springs. 4,494,306, Cl. 29-809.000.
Impact Systems, Inc.: *See—*
Stephansen, Erik; Sharma, Rajeeva; and Richie, Michael, 4,494,316, Cl. 34-68.000.
Imperial Chemical Industries, PLC: *See—*
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.
Walker, Brian J.; and Hodgson, Victor F., 4,495,013, Cl. 156-79.000.
Imperial Clevite Inc.: *See—*
O'Brien, James W.; and Spevak, Frank, 4,495,252, Cl. 428-555.000.
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, to Fujitsu Fanuc Limited. System for controlling an industrial robot. 4,495,453, Cl. 318-568.000.
Inagaki, Shigemi: *See—*
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.
Inagaki, Takeshi: *See—*
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Rattin, Luciano; and Vigliermo, Amerigo, 4,494,866, Cl. 355-57.000.
Inger, Siegfried, to Palitex Project-Company GmbH. Stop motion for textile machines. 4,494,370, Cl. 57-81.000.
Iniesta, Jorge P.: *See—*
Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P., 4,495,199, Cl. 514-467.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,495,038, Cl. 204-129.200.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electroerosively wire-cutting a conductive workpiece. 4,495,038, Cl. 204-129.200.
Inoue, Takahiro: *See—*
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.
Inoue, Takehisa: *See—*
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, to Nikken Chemicals Co., Ltd.; and Institute of Organic Synthesis Academy of Sciences Latvian SSR. 1,4-Dihydropyridine compound. 4,495,356, Cl. 546-268.000.
Inouye, Shigeharu: *See—*
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.
Inresco, Inc.: *See—*
Martin, George L.; and Melick, Howard G., 4,495,480, Cl. 335-199.000.
Institut Elektrosvarki Imeni E.O.Patona: *See—*
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepur-

noi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Institut Fiologii Razvitia Imeni N.K. Koltsova Akademii Nauk SSSR: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Institut Francais du Petrole: *See*—
Desbrandes, Robert; and Norel, Guy, 4,495,605, Cl. 367-33.000.

Institut National de la Recherche Agronomique: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.

Institut Organicheskoi Khimii Imeni N.D. Zelinskogo: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Institut Textile De France: *See*—
Wattiez, Daniel; and Hennion, Jean-Claude, 4,494,264, Cl. 8-150.000.

Institute of Organic Synthesis Academy of Sciences Latvian SSR.: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.

International Business Machines Corporation: *See*—
Barthel, Jan; and Bublitz, Hermann R., 4,495,597, Cl. 364-900.000.
Brunin, Armand; and D'Hervilly, Guy, 4,495,626, Cl. 375-19.000.
Draper, Wilburn D.; and Laakso, Melvin T., 4,495,564, Cl. 364-200.000.
Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,495,594, Cl. 364-900.000.
Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., 4,495,559, Cl. 364-148.000.
Hermann, Karl, 4,495,479, Cl. 333-238.000.
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.
Isaac, Randall D.; and Ning, Tak H., 4,495,512, Cl. 357-34.000.
Johnson, Charles L.; and Ryba, John M., 4,495,377, Cl. 174-68.500.
Mitchell, Ralph C., Jr., 4,495,590, Cl. 364-716.000.
Safai, Sohrab, 4,494,305, Cl. 29-764.000.
Simi, Victor M.; and Sublette, Jerry M., 4,495,554, Cl. 363-21.000.

International Business Machines, Inc.: *See*—
Schwuttke, Guenter H.; and Yang, Kuei H., 4,494,300, Cl. 29-571.000.

International Cube Corporation: *See*—
Howard, Philip H., 4,495,318, Cl. 524-375.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.
Boden, Richard M., 4,495,359, Cl. 549-356.000.

International Harvester Co.: *See*—
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.

International Paper Company: *See*—
DiGeronimo, Michael J., 4,494,357, Cl. 53-167.000.

International Standard Electric Corporation: *See*—
Franklin, Robert W.; and Briscoe, Peter F., 4,494,299, Cl. 29-570.000.
Hopfensperger, Reinhold, 4,494,908, Cl. 415-206.000.
Shuh, Bruce D., 4,495,616, Cl. 370-62.000.

International Telephone and Telegraph Corporation: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.
Casilli, Joseph C.; Gibson, Lawrence; and Hessler, William D., 4,494,574, Cl. 137-625 600.

Inui, Masaki; and Yasui, Yasuyoshi, to Toyota Jidosha Kabushiki Kaisha. Transmission mechanism in a manual transmission. 4,494,419, Cl. 74-477.000.

Iowa State University Research Foundation, Inc.: *See*—
Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., 4,494,694, Cl. 238-2.000.

IPT Corporation: *See*—
Brown, M. Wayne, 4,494,515, Cl. 123-527.000.

Irion & Vosseler GmbH & Co. & Zahlerfabrik: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Isaac, Randall D.; and Ning, Tak H., to International Business Machines Corporation. Self-aligned bipolar transistor with inverted polycide base contact. 4,495,512, Cl. 357-34.000.

Isaksson, Rolf H. V.: *See*—
Flensburg, Carl G. A.; and Isaksson, Rolf H. V., 4,494,360, Cl. 53-528.000.

Ishida, Kazuhiro: *See*—
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,495,601, Cl. 365-1.000.

Ishigaki, Yukinobu, to Victor Company of Japan, Ltd. Circuit arrangement for deriving a level control signal using silicon diodes. 4,495,428, Cl. 307-490.000.

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Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.

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Ishikawa, Shozo: *See*—
Takahashi, Hideyuki; and Ishikawa, Shozo, 4,495,264, Cl. 430-58.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Iwanami, Toshio; and Watanabe, Hajime, 4,494,396, Cl. 72-243.000.

Ishimi, Haruyoshi: *See*—
Yahiro, Tetsuji; and Ishimi, Haruyoshi, 4,494,494, Cl. 123-55.0VS.

Ishizuka, Hiroshi. Method for electrolytically obtaining magnesium metal. 4,495,037, Cl. 204-70.000.

Itagaki, Takaharu; Ouchi, Hidenaga; and Shimura, Akihiro, to Mitsubishi Chemical Industries, Limited. Anion exchange resin of surface functional type and the process for producing the same. 4,495,250, Cl. 428-520.000.

Itai, Reiichi: *See*—
Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, 4,495,048, Cl. 204-267.000.

Itakura, Tomiya: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.

Italtractor ITM SpA: *See*—
Grilli, Walter; De Meo, Franco; and Franchini, Ivan, 4,495,004, Cl. 148-16.500.

Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Device and method for accurately controlling automatic transmission with lockup clutch. 4,495,576, Cl. 364-424.100.

Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, to Ebara Corporation. Apparatus for composting. 4,495,290, Cl. 435-315.000.

Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, to Nippondenso Co., Ltd. Fuel injection system for internal combustion engines. 4,494,511, Cl. 123-463.000.

Ito, Tetsuo: *See*—
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.

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Itoh, Hidetoshi: *See*—
Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, 4,495,600, Cl. 364-900.000.

Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,495,112, Cl. 261-41.00D.

ITT Industries, Inc.: *See*—
Carlsson, Valdemar; and Fredriksson, Boris, 4,494,758, Cl. 277-14.00V.
Körnaker, Walter, 4,495,438, Cl. 313-412.000.
Stoka, Roberto; and Haar, Lucas H., 4,494,630, Cl. 188-71.800.

Ivony, Jozsef: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Iwahashi, Haruo: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.

Iwamatsu, Noboru: *See*—
Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, 4,495,464, Cl. 324-174.000.

Iwamoto, Tomio: *See*—
Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, 4,494,823, Cl. 350-96.220.

Iwanami, Toshio; and Watanabe, Hajime, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Multistage rolling mill with flatness control function. 4,494,396, Cl. 72-243.000.

Iwata Electric Co., Ltd.: *See*—
Iwata, Keisuke, 4,495,649, Cl. 455-115.000.

Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, to Teijin Limited. Visible light-sensitive polyester polymer and visible light-sensitive resin composition containing said polymer. 4,495,343, Cl. 528-292.000.

Iwata, Keisuke, to Iwata Electric Co., Ltd. Power source device for portable type radio apparatus. 4,495,649, Cl. 455-115.000.

Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, to Toa Medical Electronic Co., Ltd. Optical-type automatic analyzing and measuring apparatus. 4,495,149, Cl. 422-65.000.

IXI Laboratories, Inc.: *See*—
Johnson, Ronald R.; Melville, James A.; and Schuelke, Richard D., 4,494,900, Cl. 414-27.000.

Izadi, Said: *See*—
Cruzen, Gerald S.; Izadi, Said; and Nagy, Peter, 4,494,287, Cl. 29-156.80R.

Jaakonmaki, Matti; and Raura, Pentti, to Rauma-Repola Oy Loviisan Tehtaat. Wood chip shaver. 4,494,587, Cl. 144-162.00R.

Jackson, Kenneth P.: *See*—
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.

Jackson, Thomas R. Electrolytic dental etching apparatus. 4,495,045, Cl. 204-224.00R.

Jacob, Rudi: *See*—
Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, 4,494,427, Cl. 83-306.000.

Jacobs, Alan M.; Kenney, Edward S.; and McInerney, Joseph J., to Research Corporation. Multichannel radiography employing scattered radiation. 4,495,636, Cl. 378-87.000.

Jacobson, Hubert B. Fishing rod handle with reel seat. 4,494,333, Cl. 43-22.000.

Jaecker, John A.: *See*—
Yoo, Jin S.; and Jaecker, John A., 4,495,304, Cl. 502-66.000.
Yoo, Jin S.; and Jaecker, John A., 4,495,305, Cl. 502-65.000.
Jaffe, Wolfgang: *See*—
Herr, John A.; and Jaffe, Wolfgang, 4,495,430, Cl. 310-198.000.
Jagenberg AG: *See*—
Wood, David, 4,494,901, Cl. 414-28.000.
Jager, Gerhard: *See*—
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, 4,495,370, Cl. 568-322.000.
Jager, Karlheinz: *See*—
Rickus, Edmund; and Jager, Karlheinz, 4,495,375, Cl. 136-255.000.
Jagielski, David: *See*—
Frias, Ronald J.; Jagielski, David; and Schetter, Nicholas R., 4,494,859, Cl. 355-5.000.
Jakusch, Helmut: *See*—
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.
James, Richard D.: *See*—
Magee, Mark R.; and James, Richard D., 4,495,541, Cl. 361-225.000.
Janberg, Klaus G.; and Methling, Dieter, to GNS Gesellschaft fur Nuklear-Service mbH. Radioactive-waste container with leak monitor. 4,495,139, Cl. 376-203.000.
Janicke, Johan, to Ateliers des Charmilles S.A. Fluid jetstream threading mechanism and method for travelling wire EDM apparatus. 4,495,393, Cl. 219-69.00M.
Janik, Rudolf: *See*—
Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, 4,495,420, Cl. 250-367.000.
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., to Latenstein Zetmeel B.V. Separation of gluten and starch from wheat flour. 4,494,530, Cl. 127-69.000.
Japan Carlit Co., Ltd., The: *See*—
Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, 4,495,048, Cl. 204-267.000.
Japan Storage Battery Company Limited: *See*—
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.
Japan Synthetic Rubber Co., Ltd.. *See*—
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.
Jarvis, Allan P., Jr.; and Lim, Franklin, to Damon Biotech, Inc. Method of culturing anchorage dependent cells. 4,495,288, Cl. 435-241.000.
Jautelat, Manfred; Arlt, Dieter; and Jager, Gerhard, to Bayer Aktiengesellschaft. Preparation of 5-aryloxy-1-chloro-3,3-dimethyl-2-pentanones. 4,495,370, Cl. 568-322.000.
Jelinek, Nikolaus: *See*—
Becherer, Walter; Geyken, Erwin; and Jelinek, Nikolaus, 4,494,706, Cl. 242-65.000.
Jenoptik Jena G.m.b.H.: *See*—
Hentschel, Peter; Meyl, Wolfgang; and Seipelt, Egon, 4,494,870, Cl. 356-152.000.
Jeumont-Schneider: *See*—
Avril, Pierre, 4,494,450, Cl. 98-42.020.
Johansson, Karl N.: *See*—
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
John, William W.: *See*—
Andrea, Tariq A.; John, William W.; and Steffens, James J., 4,494,981, Cl. 71-93.000.
Johns Hopkins University, The: *See*—
Fischell, Robert E., 4,494,950, Cl. 604-66.000.
Johnson, Charles L.; and Ryba, John M., to International Business Machines Corporation. Substrate wiring patterns for connecting to integrated-circuit chips. 4,495,377, Cl. 174-68.500.
Johnson, Clarence W., to Bralorne Resources Limited. Casing hanger. 4,494,778, Cl. 285-146.000.
Johnson Engineering Corp.: *See*—
Miller, Scott A., III, 4,495,496, Cl. 340-825.540.
Johnson, Joseph A., to Texas Industries, Inc. Method and apparatus for making antique brick. 4,495,132, Cl. 264-293.000.
Johnson, Lloyd D.; and Lewis, Jack H., to Standard-Knapp, Inc. Case feeding apparatus for drop packer. 4,494,355, Cl. 53-69.000.
Johnson, Ronald R.; Melville, James A.; and Schuelke, Richard D., to IXI Laboratories, Inc. Flexible disk sorter slide apparatus. 4,494,900, Cl. 414-27.000.
Johnson, Roy A., to Upjohn Company, The. Pyridyl-substituted-benzofurans. 4,495,357, Cl. 546-269.000.
Johnston, James R., to National Manufacturing Co. Door frame construction. 4,494,354, Cl. 52-814.000.
Jones, C. A.; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,495,374, Cl. 585-500.000.
Jones, Charles B.: *See*—
Gebrian, Peter L.; and Jones, Charles B., 4,495,014, Cl. 156-80.000.
Jones, David A., Jr.: *See*—
Hansen, Donald W., Jr.; Jones, David A., Jr.; Mazur, Robert H.; and Schlatter, James M., 4,495,178, Cl. 514-17.000.
Jones, David B.: *See*—
Smith, Donald L.; and Jones, David B., 4,495,382, Cl. 179-81.00R.
Jones, Kenneth R., to Mustang Tripsaver, Inc. Jarring tool. 4,494,615, Cl. 173-119.000.
Jons, Ebbe S.; and Gude, Klaus E., to A/S Niro Atomizer. Preparation of a calcium sulfate anhydrite material of low chloride content. 4,495,162, Cl. 423-171.000.
Jorgensen, H. A.: *See*—
Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., 4,494,583, Cl. 141-83.000.
Joslyn Mfg. and Supply Co.: *See*—
Lusk, George E., 4,494,890, Cl. 403-267.000.
Jost, Bernhard. Plant for utilization of wind and waves. 4,495,424, Cl. 290-53.000.
Jouk, Leo. Folding wheelchair. 4,494,791, Cl. 297-45.000.
Joy Manufacturing Company: *See*—
Young, Terry G., 4,494,568, Cl. 137-561.00A.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Brunner, Josef, 4,494,803, Cl. 308-3.800.
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K-Tron Soder A.G.: *See*—
Klein, Karl-Heinz, 4,494,678, Cl. 222-77.000.
Kabelmetal Electro GmbH: *See*—
Schauer, Friedrich, 4,494,308, Cl. 29-858.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Hashimoto, Yasuyuki, 4,494,642, Cl. 192-106.200.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Ohnishi, Haruo; and Mitsuhashi, Masakazu, 4,495,282, Cl. 435-68.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Matsuno, Tadaaki, 4,494,619, Cl. 177-25.000.
Kabushiki Kaisha Johnan Seisakusho: *See*—
Ishii, Kinichi; and Araki, Yoshiharu, 4,494,336, Cl. 49-352.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Nagata, Yoshihiro, 4,494,621, Cl. 180-6.200.
Tamaki, Hiroaki; and Nakamura, Joji, 4,494,613, Cl. 173-74.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Ouchi, Teruo; and Shibuya, Hiromichi, 4,495,134, Cl. 264-516.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Matsui, Takahiro, 4,494,933, Cl. 433-98.000.
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Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, 4,494,371, Cl. 57-263.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.
Kabushiki Kaisha Yanagiya Tekkosho: *See*—
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Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, 4,495,588, Cl. 364-513.000.
Kadokura, Hidekimi: *See*—
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Kagawa, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Interrupt control for multiprocessor system with storage data controlling processor interrupted by devices. 4,495,569, Cl. 364-200.000.
Kaiser, Ewald A.: *See*—
Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., 4,494,256, Cl. 4-502.000.
Kajihara, Takehiro: *See*—
Kaneno, Masayuki; and Kajihara, Takehiro, 4,495,116, Cl. 264-1.200.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, to Uroko Seisakusho Co., Ltd. Veneer lathe. 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, to Uroko Seisakusho Co., Ltd. Veneer lathe. 4,494,590, Cl. 144-213.000.
Kakuhashi, Takeshi; and Tahara, Hiroshi, to Nitto Electric Industrial Co., Ltd. Part for a slide variable resistor. 4,495,524, Cl. 338-314.000.
Kals, Walter, to Niagara Blower Company. Vacuum producing condenser. 4,494,599, Cl. 165-67.000.
Kamatani, Yoshio: *See*—
Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, 4,495,020, Cl. 156-314.000.
Kamath, G. Sanjiv: *See*—
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.
Kamifuji, Hiroshi: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.
Kammann, Gunter: *See*—
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.
Kanai, Shunichiro; and Miyauchi, Teruo, to Nissan Motor Company, Limited. Exhaust unit support device. 4,494,722, Cl. 248-621.000.
Kanamori, Hiroshi, to Nissan Motor Company, Limited. Electroluminescent display structure for motor vehicle window. 4,494,326, Cl. 40-593.000.
Kane, John J., to Pittsburgh & Conneaut Dock Company, The. Thaw shed heater. 4,494,462, Cl. 104-1.00R.
Kaneko, Masaharu: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.

Kaneno, Masayuki; and Kajihara, Takehiro, to NGK Insulators, Ltd. Polycrystalline translucent alumina sintered body, a method for producing the same and a high pressure vapor discharge lamp obtained by using said sintered body. 4,495,116, Cl. 264-1.200.

Kanki, Kazuhiko: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.

Kao Soap Co., Ltd.: *See*—
Matsunaga, Kiyjiro; Okumura, Takeo; and Tsushima, Rikio, 4,495,173, Cl. 424-70.000.

Karaszi, Gyorgy: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Karpetsky, Timothy P.; and Brown, Glenn E., to United States of America, Health and Human Services. Isoelectric focussing-polynucleotide/polyacrylamide gel electrophoresis. 4,495,279, Cl. 435-6.000.

Karpov, Vladimir F.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Kasai, Yoshiaki: *See*—
Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, 4,495,579, Cl. 364-431.070.

Kashiwabara, Susumu: *See*—
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Kassel, David L.: *See*—
Engelstein, Charles; Kassel, David L.; and Goodman, Harry, 4,495,257, Cl. 429-100.000.

Kastelic, Rudolph F. Pre-engineered modular building panel assembly. 4,494,348, Cl. 52-588.000.

Kasten, Robert E.: *See*—
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.

Kasuga, Muneo: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Kasuya, Hideo: *See*—
Endo, Hiroshi; Sone, Masazumi: Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.

Katalco Corporation: *See*—
Clements, Porter, 4,495,307, Cl. 502-305.000.

Katayama, Hiroomi; and Hirosawa, Yoshiaki, to New Nippon Electric Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Engine ignition interpolation apparatus. 4,494,518, Cl. 123-612.000.

Kato, Katuo, to NHK Spring Co., Ltd. Impact damper. 4,494,634, Cl. 188-380.000.

Kato, Kiichi: *See*—
Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, 4,495,407, Cl. 250-201.000.

Kato, Takashi; and Toyokura, Nobuo, to Fujitsu Limited. Process for producing dielectric layers for semiconductor devices. 4,495,219, Cl. 427-82.000.

Katou, Takashi: *See*—
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.

Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, to Canon Kabushiki Kaisha. Flash photographing system. 4,494,850, Cl. 354-416.000.

Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Piezoelectric vibration wave motor with sloped drive surface. 4,495,432, Cl. 310-328.000.

Katsuyama, Akira: *See*—
Kimura, Shuichi; and Katsuyama, Akira, 4,495,608, Cl. 369-33.000.

Kaufman, Vernon R., to Tecumseh Products Company. Connecting rod arrangement. 4,494,286, Cl. 29-156.50A.

Kaul, Bansi L.: *See*—
Bitterli, Peter; and Kaul, Bansi L., 4,494,955, Cl. 8-512.000.

Kavesh, Sheldon; Sellers, Gregory J.; and Witte, Wayne H., to Allied Corporation. Amorphous antipilferage marker. 4,495,487, Cl. 340-572.000.

Kawabata, Takashi, to Canon Kabushiki Kaisha. Radiation sensing system. 4,495,415, Cl. 250-336.100.

Kawahira, Hiroto: *See*—
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.

Kawakami Co., Ltd.: *See*—
Noboru, Nasu; and Tatsuo, Inada, 4,494,740, Cl. 270-31.000.

Kawakami, Kniichi, to Yoshida Kogyo K.K. Method and apparatus for attaching pin fittings to slide fastener having separable end stop. 4,494,293, Cl. 29-408.000.

Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, to Konishiroku Photo Industry Co., Ltd. Optical element and optical polycarbonate resin composition for the preparation thereof. 4,495,345, Cl. 528-372.000.

Kawakami, Yukichika: *See*—
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.

Kawakatsu, Shiro; and Kawasaki, Toshikazu, to Daihatsu Motor Co., Ltd. Alarming apparatus of vehicle. 4,495,484, Cl. 340-52.00D.

Kawamura, Masaharu: *See*—
Katsuma, Makoto; Kawamura, Masaharu; and Yamada, Masanori, 4,494,850, Cl. 354-416.000.

Kawamura, Setuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Negative pressure control apparatus. 4,494,559, Cl. 137-116.500.

Kawamura, Takahide: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Takada, Toshiyuki; and Tamba, Shinichi, 4,494,491, Cl. 123-41.720.

Kawasaki Steel Corporation: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.

Kawasaki, Toshikazu: *See*—
Kawakatsu, Shiro; and Kawasaki, Toshikazu, 4,495,484, Cl. 340-52.00D.

Kawasaki, Dennis R.: *See*—
Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., 4,495,598, Cl. 364-900.000.

Keck, Donald B.: *See*—
Bhagavatula, Venkata A.; and Keck, Donald B., 4,494,968, Cl. 65-3.120.

Keck, Marvin C.: *See*—
Paulus, John R.; and Keck, Marvin C., 4,494,786, Cl. 294-26.000.

Kearns, Larry R., to E-Systems, Inc. Navigation system. 4,495,580, Cl. 364-450.000.

Keegan, James J., to Warner-Lambert Company. Denture adhesive creams with improved extrudability. 4,495,314, Cl. 523-120.000.

Keim, Karl-Heinz: *See*—
Dolkemeyer, Wilfried; Keim, Karl-Heinz; and Meisenburg, Ewald, 4,494,960, Cl. 44-51.000.

Kell, Howard A., Jr.: *See*—
Godwin, Paul K., Jr.; and Kell, Howard A., Jr., 4,494,712, Cl. 242-191.000.

Keller, Philip J., to Bijur Lubricating Corp. Positive displacement injector. 4,494,913, Cl. 417-349.000.

Kelley Company Inc.: *See*—
Schwab, James M., 4,494,341, Cl. 52-173.0DS.

Kelley, Richard W. Motorcycle lift and method. 4,494,764, Cl. 280-293.000.

Kelly, Michael J., to Trace Athletic Corporation. Knee/elbow guard treated to increase durability and a process for producing same. 4,494,247, Cl. 2-24.000.

Kelly, William W.; and Bradshaw, Cyril E., to Eaton Corporation. Controlling EGR in an internal combustion engine and fluid pressure signal controller therefor. 4,494,510, Cl. 123-568.000.

Kempter, Fritz-Erdmann: *See*—
Schenck, Hans-Uwe; Blum, Rainer; Gulbins, Erich; Kempter, Fritz-Erdmann; and Schupp, Eberhard, 4,495,327, Cl. 524-556.000.

Kendall Company, The: *See*—
Lau, Wing-Yan T.; and Bradberry, Laylon E., 4,494,388, Cl. 66-178.00A.

Kendall, Robert M.; and Schreiber, Richard J., to Gas Research Institute. Fired heater. 4,494,485, Cl. 122-250.00R.

Kennedy, Thomas M.: *See*—
McGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., 4,495,394, Cl. 219-69.00C.

Kenney, Edward S.: *See*—
Jacobs, Alan M.; Kenney, Edward S.; and McInerney, Joseph J., 4,495,636, Cl. 378-87.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Ali-Khan, Imran; Dietz, Karl-Jurgen; Waelbroeck, Francois; and Wienhold, Peter, 4,494,965, Cl. 55-16.000.
Barnert, Eike; and Schmitz, Heinz, 4,495,215, Cl. 427-6.000.

Kersen, Matthew F.: *See*—
Uherek, Vladimir; and Kersen, Matthew F., 4,494,628, Cl. 187-29.00R.

Kesner, Donald k.: *See*—
Ampulski, Joseph W.; Furukawa, James N.; Kesner, Donald R.; and Bernal, Ronald D., 4,495,617, Cl. 370-86.000.

Khimiko-Metallurgichesky Institut: *See*—
Bauer, Ivan K.; Malyshev, Vitaly P.; Abishev, Dzhantore N.; Belyaev, Sergei V.; Shirokov, Anatoly I.; Baltynova, Nazymkul; Alipchenko, Elena S.; Ekeibaev, Djusenkhan D.; and Abdulkhairov, Vakhit T., 4,494,930, Cl. 432-95.000.

Khoe, Giok D.: *See*—
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.

Kice, John E., to Kice Metal Products Co., Inc. Rotary mixing damper method and means. 4,495,113, Cl. 261-64.00R.

Kice Metal Products Co., Inc.: *See*—
Kice, John E., 4,495,113, Cl. 261-64.00R.

Kida, Masahiko: *See*—
Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, 4,495,595, Cl. 364-900.000.

Kidd, Patrick D.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,495,172, Cl. 424-61.000.

Kieffer, Robert A. Seal for relatively rotatable parts. 4,494,759, Cl. 277-25.000.

Kikuchi, Tatsuro: *See*—
Nakamura, Tsuneshi; and Kikuchi, Tatsuro, 4,495,546, Cl. 361-398.000.

Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, to Nippon Electric Co., Ltd. Tabulation system. 4,495,600, Cl. 364-900.000.

Kilguss, Howard M., to Excell Manufacturing Company. Jewelry chain clasp assembly. 4,494,279, Cl. 24-336.000.

Kim, He B.: *See*—
Lemnios, Zachary J.; and Kim, He B., 4,494,997, Cl. 148-1.500.

Kim, Kyusik. Shockcone and channeled disk-airframe. 4,494,713, Cl. 244-15.000.

Kim, Sun H.; and Moreau, Jacques-Pierre, to Biomeasure, Inc. Imidazole compounds which reduce gastric acid secretion. 4,495,193, Cl. 514-385.000.

Kimball International, Inc.: *See*—
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., 4,494,721, Cl. 248-406.200.

Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Automatic rewinding device for film in camera. 4,494,842, Cl. 354-173.110.

Kimura, Katsuhiko: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Kimura, Shuichi; and Katsuyama, Akira, to Sony Corporation. Device for rapidly moving an optical pick-up device in an optical reproducing apparatus to a desired position on a record disc. 4,495,608, Cl. 369-33.000.

King, Richard L.: *See*—
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

Kinjyo, Masasige: *See*—
Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.

Kinoshita, Akira: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Kinoshita, Taketoshi: *See*—
Shimizu, Kimihiro; Nakahara, Tsuguji; and Kinoshita, Taketoshi, 4,495,285, Cl. 435-215.000.

Kinoshita, Takuji: *See*—
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.

Kiriki, Toshihiko: *See*—
Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.

Kirkpatrick, Edward S.: *See*—
Gelatt, Charles D., Jr.; and Kirkpatrick, Edward S., 4,495,559, Cl. 364-148.000.

Kirkwood, Wayne E.: *See*—
Scott, Brian L.; and Kirkwood, Wayne E., 4,495,384, Cl. 179-107.0FD.

Kishi, Noriyuki; and Hasagawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling a fuel supplying apparatus for internal combustion engines. 4,494,512, Cl. 123-489.000.

Kishi, Takaji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Release agent and product. 4,495,243, Cl. 428-352.000.

Kitagawa Industries Co., Ltd.: *See*—
Matsui, Kazuhiro, 4,495,548, Cl. 361-413.000.

Kitahara, Nobuaki: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.

Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, to Nissan Motor Company, Limited. Air/fuel ratio monitoring system in IC engine using oxygen sensor. 4,494,374, Cl. 60-276.000.

Kitahiro, Isamu: *See*—
Hatada, Kenzo; and Kitahiro, Isamu, 4,494,688, Cl. 228-180.00A.

Kitajima, Hiroyuki; and Ohmachi, Kazuhiko, to Hitachi, Ltd. Processing request allocator for assignment of loads in a distributed processing system. 4,495,570, Cl. 364-200.000.

Kitao, Zenichi; and Koizumi, Haruyuki, to Omron Tateisi Electronics Co. Alternate on-off switch mechanism. 4,495,391, Cl. 200-153.00J.

Kiyomatsu, Yasuhiro: *See*—
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.

Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, to Komatsu Zenoah Co. Cylinder cover. 4,494,490, Cl. 123-41.560.

Kjelgaard, Tom: *See*—
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, 4,495,016, Cl. 156-152.000.

Klagmann, Josef, to Golden Team Sportartikel GmbH. Shoe. 4,494,322, Cl. 36-28.000.

Klatt, Alfred: *See*—
Seegers, Gunter; Sebesta, Gunter; and Klatt, Alfred, 4,494,571, Cl. 137-596.160.

Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., to American Home Products Corporation. Antiinflammatory 5H-tetrazolo (5,1-c)(1,4)benzodiazepine derivatives. 4,495,101, Cl. 260-239.30T.

Klawitter, Ronald R., to Handi-Pac, Inc. Kaleidoscope assembly. 4,494,820, Cl. 350-4.100.

Kleber, Kurt. Steam kiln. 4,494,683, Cl. 223-51.000.

Klein, Elias; and Beach, Douglas J., to Tracor, Inc. Apparatus for preparation of infusion grade water. 4,495,067, Cl. 210-87.000.

Klein, Karl-Heinz, to K-Tron Soder A.G. Apparatus for compensating a pressurized vessel on a scale. 4,494,678, Cl. 222-77.000.

Klinedinst, Keith A.; and Schlaikjer, Carl R., to GTE Laboratories Incorporated. High rate electrochemical cell. 4,495,266, Cl. 429-105.000.

Klockner-Humboldt-Deutz AG: *See*—
Guttmann, Friedrich W., 4,494,736, Cl. 266-265.000.
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,494,991, Cl. 106-100.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Zenker, Walter, 4,494,638, Cl. 192-48.910.

Klotzer, Sieghart: *See*—
Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, 4,495,277, Cl. 430-567.000.

Knapke, Paul H.: *See*—
Aro, Enn; Bogan, Leonard E.; Hamersley, Richard A.; Knapke, Paul H.; and Miller, Robert L., 4,495,614, Cl. 370-58.000.

Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, to Hughes Aircraft Company. Accelerated annealing of gallium arsenide solar cells. 4,494,302, Cl. 29-575.000.

Knoblock, Dennis F.: *See*—
Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., 4,494,775, Cl. 285-26.000.

Knoll, Jozsef: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Morpholino propanol derivatives, fungicidal compositions and use. 4,495,184, Cl. 514-238.000.

Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, to Sartorius GmbH. Electric balance. 4,494,620, Cl. 177-25.000.

Knuchel, Max, to SIG- Schweizerische Industrie-Gesellschaft. Apparatus for aligning elongated articles. 4,494,643, Cl. 198-392.000.

Knudson, Robert M.; and Ehrenfellner, Hubert, to MacMillan Bloedel Limited. Apparatus for laying a mat of wood strands. 4,494,919, Cl. 425-83.100.

Kobayashi, Haruhiko: *See*—
Ito, Tomoo; Kamifuji, Hiroshi; Kobayashi, Haruhiko; and Itakura, Tomiya, 4,494,498, Cl. 123-179.00G.

Kobayashi, Katsuyoshi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.

Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, to Konishiroku Photo Industry Co., Ltd. Automatic film rewind method for camera. 4,494,843, Cl. 354-214.000.

Kobayashi, Yuji: *See*—
Yamaji, Hiromasa; and Kobayashi, Yuji, 4,494,905, Cl. 414-584.000.

Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, to Toyota Jidosha Kabushiki Kaisha. Device for mounting an engine on a vehicle body. 4,494,723, Cl. 248-635.000.

Koch, Keith C., to Metromail, Inc. Package forming web folder. 4,494,362, Cl. 53-550.000.

Kochanowski, Hans-Alfred, to Motorenfabrik Hatz GmbH & Co. KG. Liquid-cooled power aggregate or engine having an arrangement for suppressing vibration. 4,494,492, Cl. 123-41.840.

Kochiyama, Shigekichi: *See*—
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, 4,494,924, Cl. 431-78.000.

Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, to Westinghouse Electric Corp. Permanent deactivation of nuclear reactor. 4,495,140, Cl. 376-207.000.

Kochs Adler AG: *See*—
Fischer, Jochen; and Scholl, Hans, 4,494,470, Cl. 112-121.120.

Kodaira, Masanori: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.

Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, to Olympus Optical Co., Ltd. System for focusing an optical head onto a flat surface. 4,495,407, Cl. 250-201.000.

Kogane, Mikio, to Fuji Photo Film Co., Ltd. Interchangeable cutter mechanism. 4,494,432, Cl. 83-559.000.

Kogure, Hiroshi: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.

Kohigashi, Minoru: *See*—
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.

Kohno, Takeshi: *See*—
Horii, Tetsuo; and Kohno, Takeshi, 4,494,655, Cl. 209-569.000.

Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, to Victor Company of Japan, Ltd. Wheel-driven mode switching mechanism for cassette tape recorders. 4,495,535, Cl. 360-96.300.

Koike, Hiroyuki: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.

Koine, Richard, to Rheinmetall GmbH. Arming sets for weapons system. 4,494,440, Cl. 89-33.040.

Koito Seisakusho Co., Ltd.: *See*—
Sakuma, Toranosuke, 4,494,420, Cl. 74-479.000.

Koizumi, Haruyuki: *See*—
Kitao, Zenichi; and Koizumi, Haruyuki, 4,495,391, Cl. 200-153.00J.

Koizumi, Naohiko: *See*—
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.

Kojima, Tadashi: *See*—
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, 4,495,474, Cl. 331-11.000.

Kolchin, Sergei P.: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Kolpek, Robert A.: *See*—
Hopper, Beth R.; Howell, Dan M.; and Kolpek, Robert A., 4,495,490, Cl. 340-709.000.

Komamura, Tawara: *See*—
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.

Komatsu, Akira: *See*—
Yamada, Kyota; and Komatsu, Akira, 4,495,638, Cl. 381-27.000.

Komatsu Zenoah Co.: *See*—
Kiyooka, Katsumi; Harada, Atsushi; and Anbo, Kiyoshi, 4,494,490, Cl. 123-41.560.

Komons, Michael; Wiseman, Donald F.; and Galanis, Andreas I., to Ebtron, Inc. Means for measuring large area mass flow. 4,494,406, Cl. 73-204.000.

Komori, Haruyuki, to Seiko Seiki Kabushiki Kaisha. Bearing structure for an air compressor. 4,494,917, Cl. 418-69.000.

Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Engine vibration sensor. 4,494,409, Cl. 73-651.000.

Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, to Canon Kabushiki Kaisha. Printing device. 4,494,886, Cl. 400-208.000.

Konishi, Hideo; Matsuoka, Kazunori; and Gouya, Takao, to Sharp Kabushiki Kaisha. Electronic tuning type radio receivers. 4,495,650, Cl. 455-144.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.
Matsunawa, Masahiko; and Abe, Yoshinori, 4,495,522, Cl. 358-280.000.
Matsuzaki, Masatoshi; Yamazaki, Toshinori; Myokan, Isao; Shima, Tetsuo; and Nomori, Hiroyuki, 4,495,262, Cl. 430-58.000.
Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, 4,495,261, Cl. 430-58.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
Watanabe, Koji, 4,494,853, Cl. 354-478.000.
Yoshida, Kazuhiro, 4,495,274, Cl. 430-523.000.

Konno, Tatsuo: *See*—
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Korenko, Michael K., to United States of America, Energy. Precipitation hardening austenitic superalloys. 4,494,987, Cl. 75-124.000.

Kornaker, Walter, to ITT Industries, Inc. Device for adjusting electron beams in a cathode-ray tube. 4,495,438, Cl. 313-412.000.

Korte, Kevin R.: *See*—
Wu, Dan T.; and Korte, Kevin R., 4,494,556, Cl. 131-302.000.

Koschke, Peter; and Novak, Pavel, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Pressure detector comprising a cylindrical cavity resonator having a front surface made as a diaphragm. 4,494,411, Cl. 73-724.000.

Kosenko, Alexandr I.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Kovacs, Jenoe: *See*—
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.

Kovacs, Zsuzsanna M. I.: *See*—
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.

Koyama, Masaharu: *See*—
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, 4,494,825, Cl. 350-343.000.

Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, to Meiji Seika Kaisha, Ltd. Antibiotic pyrrolomycin E. 4,495,358, Cl. 548-550.000.

Koyo Seiko Kabushiki Kaisha: *See*—
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.

Kozai, Yoshinori; Amemiya, Yoichi; and Iwamatsu, Noboru, to Fujitsu Fanuc Limited. Non-contacting, speed-detecting device of a direct-current generator type. 4,495,464, Cl. 324-174.000.

Kozik, Vladimir V.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

Kozlov, Sergei P.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Video recording system with focusing device. 4,495,527, Cl. 360-33.100.

Kraft, Timothy J.: *See*—
Chacko, Varkki P.; and Kraft, Timothy J., 4,495,324, Cl. 524-504.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Fricker, Wolfgang-Peter; Scholz, Manfred; Bauche, Heinrich; and Gollasch, Bernd, 4,495,147, Cl. 376-283.000.

Kramer, Wolfgang: *See*—
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,495,184, Cl. 514-238.000.

Kranzer, Ditmar, to Siemens Aktiengesellschaft. Method for manufacturing fast bipolar transistors. 4,495,010, Cl. 148-175.000.

Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, to Robert Bosch GmbH. Method and apparatus for controlling at least one throttle cross section in a control line. 4,494,517, Cl. 123-585.000.

Krauth, Dieter: *See*—
Adam, Roland; Krauth, Dieter; and Derndinger, Hans-Otto, 4,495,115, Cl. 261-44.00F.

Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., to United States of America, National Aeronautics and Space Administration. Television camera video level control system. 4,495,520, Cl. 358-219.000.

Kreighbaum, William E.; and Comer, William T., to Mead Johnson & Company. Heterocyclic substituted aryloxy 3-indolyl-tertiary butylaminopropanols. 4,495,352, Cl. 544-284.000.

Kresge, James S., to General Electric Company. Surge arrester discharge counting apparatus. 4,495,459, Cl. 324-72.000.

Kreuer, Klaus-Dieter: *See*—
Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, 4,495,078, Cl. 252-62.200.

Kros, Rudolf; and Vetter, Harald, to Siemens Aktiengesellschaft. Electric roller-type capacitor and method and device for producing the capacitor. 4,495,542, Cl. 361-301.000.

Kroyer, Karl K. K.; and Rasmussen, Torben, to Kroyer, Karl Kristian Kobs. Apparatus for the production of a fibrous web. 4,494,278, Cl. 19-304.000.

Kroyer, Karl Kristian Kobs: *See*—
Kroyer, Karl K. K.; and Rasmussen, Torben, 4,494,278, Cl. 19-304.000.

Kruesi, August H., to Elfin Corporation. Apparatus for manufacturing resin impregnated fiber braided products. 4,494,436, Cl. 87-23.000.

Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Valve operating mechanism, in particular for an automobile internal combustion engine. 4,494,729, Cl. 251-229.000.

Krusche, Kurt, to Allstar Verbrauchsguter GmbH & Co., KG. Storage device. 4,494,661, Cl. 211-87.000.

Kubo, Naomi, to Usui Kokusai Sangyo Kabushiki Kaisha. Manufacturing a steel tube including tuffriding. 4,495,003, Cl. 148-15.500.

Kubota, Hazime: *See*—
Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, 4,494,723, Cl. 248-635.000.

Kudo, Hisashi: *See*—
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.

Kuehl, Guenter H., to Mobil Oil Corporation. Process for making zeolite ZSM-45 with a dimethyldiethylammonium directing agent. 4,495,303, Cl. 502-62.000.

Kuehn, Arthur: *See*—
Vercillo, Alfredo J.; and Kuehn, Arthur, 4,495,456, Cl. 318-755.000.

Kuga, Tetsuro: *See*—
Araki, Kazumi; and Kuga, Tetsuro, 4,495,283, Cl. 435-107.000.

Kumar, Viraraghavan S.; and Olson, Rohn L., to Deere & Company. Control valve. 4,494,726, Cl. 251-29.000.

Kumata, Fumio: *See*—
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Kume, Hisao; and Sanma, Takahide, to Sony Corporation. Grid apparatus for use with a color cathode ray tube. 4,495,437, Cl. 313-403.000.

Kummer, David A.: *See*—
Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,495,594, Cl. 364-900.000.

Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, to Nippon Kayaku Kabushiki Kaisha. Derivative of cephamycin C. 4,495,348, Cl. 544-021.000.

Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Apparatus for simultaneous measurement of magnetic field components in mutually perpendicular directions. 4,495,467, Cl. 324-244.000.

Kunzler, Jay F.: *See*—
Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.

Kuperman, Gilbert G.: *See*—
Wallquist, Donald L.; and Kuperman, Gilbert G., 4,494,838, Cl. 351-206.000.

Kuppens, Bernardus J.; and Wardenaar, Hendrik C., to U.S. Philips Corporation. Method of and device for feeding electric and/or electronic elements to given positions. 4,494,902, Cl. 414-223.000.

Kuppers, Dieter: *See—*
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.
Kurafuji, Takamasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape player. 4,495,534, Cl. 360-74.100.
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Kurahashi, Kazuo: *See—*
Takamura, Masayuki; and Kurahashi, Kazuo, 4,494,832, Cl. 351-41.000.
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Kuraoka, Yasuo; and Sakao, Nobuo, to Hoxan Corporation. Method of preserving organ and apparatus for preserving the same. 4,494,385, Cl. 62-306.000.
Kuraseko, Takao: *See—*
Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, 4,494,390, Cl. 68-23.700.
Kurata, Masami: *See—*
Moriguchi, Fujio; and Kurata, Masami, 4,495,507, Cl. 346-76.0PH.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission casing apparatus in motorized two-wheeled vehicle. 4,494,623, Cl. 180-230.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,495,249, Cl. 428-516.000.
Shiiki, Zenya; Iizuka, Yo; and Kawakami, Yukichika, 4,495,332, Cl. 524-800.000.
Kurosu, Tomio; and Yoshikawa, Yukio, to Copal Company Limited. Electromagnetic shutter. 4,494,846, Cl. 354-400.000.
Kurz, Edmund: *See—*
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.
Kurzinski, Cass R., to AMB Technology, Inc. Spray cooling system for continuous steel casting machine. 4,494,594, Cl. 164-443.000.
Kusakabe, Tomio: *See—*
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., to Docutel Corporation. Dispenser picker apparatus. 4,494,743, Cl. 271-11.000.
KV33 Corporation: *See—*
Huffman, Ronald E., 4,494,934, Cl. 433-213.000.
Kwon, Tae M.; and Williams, Howard E., to Litton Systems, Inc. Cavity resonator for atomic frequency standard. 4,495,478, Cl. 333-230.000.
Kyowa Gas Chemical Industry Co., Ltd.: *See—*
Shimizu, Tohru; and Nakagawa, Junji, 4,495,084, Cl. 252-301.170.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Araki, Kazumi; and Kuga, Tetsuro, 4,495,283, Cl. 435-107.000.
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.
Kytta, Oswald O.; and Bach, Lloyd G., to Bendix Corporation, The. Fluid pressurizing device. 4,494,378, Cl. 60-547.100.
L.C.C.-C.I.C.E.-Compagnie Europeenne de Compsants Electroniques: *See—*
Roy, Claude, 4,494,704, Cl. 242-56.100.
La Calhene: *See—*
Picard, Claude, 4,494,586, Cl. 141-384.000.
La Telemecanique Electrique: *See—*
Lafosse, Jean, 4,494,781, Cl. 292-60.000.
Thomas, Christian, 4,495,538, Cl. 361-115.000.
Laakso, Melvin T.: *See—*
Draper, Wilburn D.; and Laakso, Melvin T., 4,495,564, Cl. 364-200.000.
LaBate, Micheal D.; and LeBate, Michael D., II. Slag retcining device for use during tapping of converters and method. 4,494,734, Cl. 266-45.000.
Labofina, S.A.: *See—*
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., 4,494,975, Cl. 71-25.000.
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, to Compagnie Generale D'Electricite. Gas laser in which the gas is excited by capacitor discharge. 4,495,631, Cl. 372-38.000.
Lacour, Gilles; and Esteveny, Serge, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Device for the introduction and/or the removal, in an airtight manner of solid bodies across one aperture at least of an enclosure treatment, more particularly under low pressure. 4,494,478, Cl. 118-50.000.
Laferty, John M.: *See—*
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., 4,495,157, Cl. 423-54.000.
Lafevers, James O.: *See—*
Kushmaul, Richard T.; Lafevers, James O.; and Webb, James E., 4,494,743, Cl. 271-11.000.
Lafosse, Jean, to La Telemecanique Electrique. Self-locking lock assembly. 4,494,781, Cl. 292-60.000.
Laguilharre S.A.: *See—*
Ciboit, Jacques J., 4,495,212, Cl. 426-492.000.
Lahann, Richard W.: *See—*
Siebert, Robert M.; and Lahann, Richard W., 4,495,292, Cl. 436-25.000.
Laing, John R., to Xerox Corporation. Cleaning apparatus for a charge retentive surface. 4,494,863, Cl. 355-15.000.
L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See—*
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.
Lakin, Kenneth M., to United States of America, Air Force. Eddy current test probe with circumferential Segments and method of testing material surrounding fastener holes. 4,495,466, Cl. 324-242.000.
Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, to Societe Nationale de L'Amiante. Process for phosphating asbestos fibers. 4,495,223, Cl. 427-215.000.
Lamb, Robert O.: *See—*
Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., 4,494,694, Cl. 238-2.000.
Lambert, Willibrordus J. S., to Honeywell Inc. Relay for a heart defibrillator. 4,494,544, Cl. 128-419.00D.
Lambeth, David N., to Eastman Kodak Company. Rangefinder device with focused elongated light source. 4,494,868, Cl. 356-1.000.
Lancaster, Gerald M.: *See—*
Vanderhider, James A.; and Lancaster, Gerald M., 4,495,081, Cl. 252-182.000.
Lance Austin Enterprises, Inc.: *See—*
Grimes, Fred K., 4,494,296, Cl. 29-432.000.
Landis, Abraham L., to Hughes Aircraft Company. Isoimide containing oligomers. 4,495,342, Cl. 528-125.000.
Landry, Christian C.: *See—*
Gregory, Jack; and Landry, Christian C., 4,494,720, Cl. 248-371.000.
Lang, John G.: *See—*
Tomaiuolo, Frank G.; and Lang, John G., 4,495,465, Cl. 324-232.000.
Langley, David T., Jr. Accumulator. 4,495,543, Cl. 361-301.000.
Lapatovich, Walter P.: *See—*
Proud, Joseph M.; and Lapatovich, Walter P., 4,495,435, Cl. 313-231.310.
Larsen, Hans-Ole, to Mia Lens Production A/S. Preparation of hydrogel for soft contact lens with water displaceable boric acid ester. 4,495,313, Cl. 523-106.000.
Larson, Ove; and Davidson, Charles, to Robotgruppen HB. Flexible arm, particularly a robot arm. 4,494,417, Cl. 74-469.000.
Larsson, Sten, to ASEA Aktiebolag. Method of producing castings with means to facilitate burr removal. 4,494,297, Cl. 29-527.600.
Lascola, John C.: *See—*
Divers, Edward F.; Lascola, John C.; and Behers, Robert G., 4,494,894, Cl. 405-290.000.
Laskaris, A. Theodore; and Roy, Paul J., to Avco Corporation. Fiber composite. 4,495,231, Cl. 428-36.000.
Lassak, Francis A.: *See—*
Newberry, Alfred L.; and Lassak, Francis A., 4,495,129, Cl. 264-235.000.
Latenser, John F. Foam boot. 4,494,536, Cl. 128-153.000.
Latenstein Zetmeel B.V.: *See—*
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., 4,494,530, Cl. 127-69.000.
Latraverse, Wendy R. Detachable shoe heel. 4,494,323, Cl. 36-42.000.
Latymer, Zdenek: *See—*
Beyts, Pamela K.; and Latymer, Zdenek, 4,495,170, Cl. 424-48.000.
Lau, Wing-Yan T.; and Bradberry, Laylon E., to Kendall Company, The. Knit construction. 4,494,388, Cl. 66-178.00A.
Laubach, Richard T.: *See—*
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.
Laude, David P., to Harris Corporation. Controlled current limiter. 4,495,537, Cl. 361-98.000.
Laug, Matthew T.: *See—*
Gross, Kenny C.; and Laug, Matthew T., 4,495,143, Cl. 376-251.000.
Laughlin, William C.: *See—*
Cleary, Michael T.; and Laughlin, William C., 4,495,106, Cl. 260-419.000.
Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate. 4,495,339, Cl. 526-262.000.
LaValle, Pablo P.: *See—*
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., 4,495,157, Cl. 423-54.000.
Lawlor, Kevin. Shock resistant shoe sole. 4,494,321, Cl. 36-28.000.
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., to Eastman Kodak Company. Transparent electrode light emitting diode and method of manufacture. 4,495,514, Cl. 357-67.000.
Lawson, Nelson E.; and Amer, Gamal I., to Union Camp Corporation. Acidulation and recovery of crude tall oil from tall oil soaps. 4,495,095, Cl. 260-97.700.
Lawton, William R., to Graphic Controls Corporation. Indicators for ethylene oxide. 4,495,291, Cl. 436-1.000.
Leach, Jerald G., to Texas Instruments Incorporated. Low power inverter circuit. 4,495,426, Cl. 307-453.000.
Leaf, Arthur L. Portable drill press mechanism. 4,494,895, Cl. 408-236.000.
LeBate, Michael D., II: *See—*
LaBate, Micheal D.; and LeBate, Michael D., II, 4,494,734, Cl. 266-45.000.

Lechner, Ernst-Friedrich: *See*—
Dotzer, Richard; and Lechner, Ernst-Friedrich, 4,495,378, Cl. 174-68.500.

Lee, Mary K. Suture cutter, extractor and method to cut and remove sutures. 4,494,542, Cl. 128-305.000.

Lee, Peter T.: *See*—
Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., 4,495,598, Cl. 364-900.000.

Lee, Te-Hsung: *See*—
Moore, Leslie G.; and Lee, Te-Hsung, 4,495,516, Cl. 358-54.000.

Leemhuis, John C. Reinforced structural member and method of fabrication. 4,494,352, Cl. 52-741.000.

Le Faou, Daniel: *See*—
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.

Lehigh Press, Inc., The: *See*—
Baley, William D., 4,494,949, Cl. 493-432.000.

Lehmann, Myrtil B., to Chanel. Device for preventing the self-unscrewing of a cap from a container. 4,494,665, Cl. 215-330.000.

Leimer, Gerhard; and Gugel, Ernst, to Feldmuhle Aktiengesellschaft. Method for the production of a polycrystalline shaped body of silicon carbide. 4,495,122, Cl. 264-65.000.

Leithauser, Horst: *See*—
Rigler, Josef-Karl; Leithauser, Horst; and Osterhoff, Heinz, 4,495,224, Cl. 427-222.000.

Leland Stanford Jr. University, The Board of Trustees of the: *See*—
Bujard, Hermann G.; Chang, Annie C. Y.; and Cohen, Stanley N., 4,495,280, Cl. 435-6.000.

Le Mehaute , Alain; and Belin, Claude, to Societe Anonyme dite: Compagnie Generale d'Electricite. Electrode of alkali metal compound for a secondary electrochemical cell, and a cell including such an electrode. 4,495,258, Cl. 429-103.000.

Lemnios, Zachary J.; and Kim, He B., to Westinghouse Electric Corp. Ion implant mask and cap for gallium arsenide structures. 4,494,997, Cl. 148-1.500.

Leppers, P. H.; and Schnoor, Walter, to Ruhrtal Elektrizitatsgesellschaft Hartig GmbH & Co. Disconnect switch. 4,495,390, Cl. 200-145.000.

Lerche, Heinz; Rache, Horst; and Wedde, Reiner, to Finnigan Mat GmbH. Process for calibrating ion-current amplifiers in mass spectrometers and mass spectrometer for carrying out the process. 4,495,413, Cl. 250-252.100.

Les Cables de Lyon: *See*—
Bourget, Jean-Claude, 4,494,307, Cl. 29-825.000.
Thevenon, Henri, 4,495,379, Cl. 174-88.00R.

Leslie Metal Arts Company: *See*—
Williams, V. Harold; and Tomsu, David L., 4,494,806, Cl. 312-333.000.

Leslie, Samuel A., to General Electric Company. Control arrangement for radio apparatus. 4,495,652, Cl. 455-234.000.

Lessard, Philip A., to Helix Technology Corporation. Cryopump with improved adsorption capacity. 4,494,381, Cl. 62-55.500.

Leveque, Jean L.: *See*—
Abrioux, Andre H.; Corcuff, Pierre; and Leveque, Jean L., 4,494,555, Cl. 128-755.000.

Levin, Sofia N., administratrix: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Levin, Viktor Y., deceased: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Levine, Stephen A.: *See*—
Powell, Justin C.; and Levine, Stephen A., 4,495,077, Cl. 252-51.50A.

Lew, Hyok S. Solar trap. 4,494,529, Cl. 126-439.000.

Lewis, Alvin W. Method of manufacturing and building preformed modular building wall sections. 4,494,353, Cl. 52-741.000.

Lewis, Jack H.: *See*—
Johnson, Lloyd D.; and Lewis, Jack H., 4,494,355, Cl. 53-69.000.

Lewis, James A.: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.

Lewis, John R.; McCurdy, Andrew; and Gaudet, Arthur D., to Polaroid Corporation. Laser printing system with developable helicoid reflector. 4,494,821, Cl. 350-6.500.

Ley, David A.; and Burkhard, Herbert, to American Cyanamid Company. Process for making trifunctional primary amine crosslinker. 4,495,366, Cl. 564-160.000.

L'Heureux, Lee H. Wire setting tool. 4,494,686, Cl. 227-147.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Weber, Herbert, 4,495,477, Cl. 332-10.000.

Lidwell, Michael O., to Barr & Stroud Limited. Telescope objective system for the infrared range. 4,494,819, Cl. 350-1.400.

Liebhold, Martin R. Butterfly chair construction. 4,494,796, Cl. 297-440.000.

Liebler, Ralf, to Rohm GmbH. Silicone resin coating agent. 4,495,322, Cl. 524-198.000.

Life-Like Products, Inc.: *See*—
Gretz, Charles, 4,494,940, Cl. 446-61.000.

Lighton, Gary R.; and Lighton, Michael S. Air-to-air weapon modification for military aircraft. 4,494,438, Cl. 89-1.813.

Lighton, Michael S.: *See*—
Lighton, Gary R.; and Lighton, Michael S., 4,494,438, Cl. 89-1.813.

Lim, Franklin: *See*—
Jarvis, Allan P., Jr.; and Lim, Franklin, 4,495,288, Cl. 435-241.000.

Limoncelli, Edward V.: *See*—
Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.

Linder, Ernst: *See*—
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, 4,494,727, Cl. 251-64.000.

Linder, Heinz, to Grapha-Holding AG. Method and apparatus for transporting and storing paper sheets and the like. 4,494,705, Cl. 242-59.000.

Lindsay, Ned. Cutting device. 4,494,435, Cl. 83-880.000.

Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., to Phillips Petroleum Company. Process for the control of sulfate-reducing bacteria. 4,495,200, Cl. 424-286.000.

Lingren, Clinton L.; and Miller, James F., to Gamma-Metrics. Fission chamber detector system for monitoring neutron flux in a nuclear reactor over an extra wide range, with high sensitivity in a hostile environment. 4,495,144, Cl. 376-255.000.

Lionis, Anastasios: *See*—
Hamid, Michael; and Lionis, Anastasios, 4,494,835, Cl. 351-158.000.

Lipp, Alfred: *See*—
Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, 4,495,123, Cl. 264-69.000.

Liptai, Nandor: *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Lischner, David J.: *See*—
Celler, George K.; Lischner, David J.; and Robinson, McDonald, 4,494,303, Cl. 29-576.00W.

Lisec, Peter. Device for filling spacing mounting frames with hygroscopic material. 4,494,283, Cl. 29-33.00K.

Lisec, Peter. Apparatus for fitting spacer frames. 4,495,023, Cl. 156-562.000.

Liston, Thomas V., to Chevron Research Company. Method for improving fuel economy of internal combustion engines. 4,495,088, Cl. 252-32.70E.

Little Caesar Enterprises, Inc.: *See*—
Ilitch, Michael, 4,494,689, Cl. 229-30.000.

Little, Charles A., III; and Patterson, Raymond B., III, to Medicomp, Inc. Alterable frequency response electrocardiographic amplifier. 4,494,551, Cl. 128-696.000.

Litton Systems, Inc.: *See*—
Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., 4,495,492, Cl. 340-783.000.
Kwon, Tae M.; and Williams, Howard E., 4,495,478, Cl. 333-230.000.
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.
Wincent, Karl T., 4,494,887, Cl. 400-568.000.

Litwinowich, Michael J.: *See*—
Butler, Russell H.; Limoncelli, Edward V.; Litwinowich, Michael J.; and Briggs, Michael L., 4,494,985, Cl. 75-93.00R.

Livingston, Kenneth N.: *See*—
Harris, Michael J.; and Livingston, Kenneth N., 4,494,710, Cl. 242-156.000.

Lloyd, Lawrence L. Mower cutting unit. 4,494,365, Cl. 56-256.000.

Lockheed Corporation: *See*—
Cronin, Michael J., 4,494,372, Cl. 60-39.070.

Loeffler, William P.: *See*—
Cath, Pieter G.; Capp, John; and Loeffler, William P., 4,495,558, Cl. 364-563.000.

Lohmann GmbH & Co. KG: *See*—
Barth, Peter, 4,494,967, Cl. 55-74.000.

Long, Alexander, to Electromotive, Inc. High resolution electronic ignition control system. 4,494,509, Cl. 123-416.000.

Loo, Robert Y.: *See*—
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,494,302, Cl. 29-575.000.

Loomis, Herschel H., Jr., to Regeants of the University of California, The. Pipelined digital filters. 4,495,591, Cl. 364-724.000.

Loomis, Robert H.: *See*—
Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., 4,495,504, Cl. 343-779.000.

Lopez, Osvaldo. Intraocular lens. 4,494,254, Cl. 3-13.000.

L'Oreal: *See*—
Abrioux, Andre H.; Corcuff, Pierre; and Leveque, Jean L., 4,494,555, Cl. 128-755.000.
Bugaut, Andree ; and Estradier, Francoise, 4,494,953, Cl. 8-408.000.

Lott, John, to Lott, Judy A. Apparatus for enhancing the performance of a vehicle air conditioning system. 4,494,384, Cl. 62-279.000.

Lott, Judy A.: *See*—
Lott, John, 4,494,384, Cl. 62-279.000.

Lottick, Edward A. Stackable non-spillable drinking container. 4,494,668, Cl. 220-90.400.

Loustau, Desir-, to Automatismes Et Techniques Advancees. Method and machine for cutting electric leads of specific length and for processing and equipping the two ends of these leads. 4,494,580, Cl. 140-1.000.

Loveless, Stanley M., to Humphrey Products Company. Four-way poppet valve assembly. 4,494,572, Cl. 137-596.170.

Lowell, Herman H. Spoked multiple-wheel printer. 4,494,884, Cl. 400-144.200.

Lowry, Alan: *See*—
Lyman, George F.; and Lowry, Alan, 4,495,289, Cl. 435-284.000.

Lozano, Raymond L.: *See*—
Yan, Tsoung-yuan; and Lozano, Raymond L., 4,495,152, Cl. 422-159.000.

Lubin, David; Connor, Larry W.; and Glass, Samuel W., to Air Conditioning Corporation. Hands-free telephone-speaker interfacer. 4,495,383, Cl. 179-100.00L.

Lucas, Frank. Waste effluent treatment and solvent recovery system. 4,495,034, Cl. 202-181.000.

Ludovico, Bruni, to AE PLC. Pistons with combustion bowl inserts. 4,494,501, Cl. 123-193.0CP.

Lukachev, Viktor P.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valéry M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Lukacz, Stephen A., to Fuller Company. Flap valve. 4,494,564, Cl. 137-527.600.

Lurssen, Klaus: *See*—
Schroder, Rolf; and Lurssen, Klaus, 4,494,982, Cl. 71-97.000.

Lusk, George E., to Joslyn Mfg. and Supply Co. Multi-wedge connector. 4,494,890, Cl. 403-267.000.

Lutz, Manfred, to Fichtel & Sachs AG. Drive device for a fastening mechanism of a motor vehicle door lock or the like. 4,494,782, Cl. 292-96.000.

Lyman, George F.; and Lowry, Alan, to Data Packaging Corporation. Tissue culture cluster dish. 4,495,289, Cl. 435-284.000.

M-O Valve Company Limited, The: *See*—
Cook, Kenneth G., 4,495,539, Cl. 361-124.000.

Ma, Thomas T., to Ford Motor Company. Ignition system. 4,494,508, Cl. 123-406.000.

MacMillan Bloedel Limited: *See*—
Knudson, Robert M.; and Ehrenfellner, Hubert, 4,494,919, Cl. 425-83.100.

Madi, Jeno : *See*—
Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno ; and Liptai, Nandor, 4,494,765, Cl. 280-432.000.

Maeda, Masaya: *See*—
Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, 4,495,527, Cl. 360-33.100.

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Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,494,957, Cl. 8-639.000.

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Newberry, Alfred L.; and Lassak, Francis A., 4,495,129, Cl. 264-235.000.

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Hurwitz, Scott L., 4,494,520, Cl. 123-633.000.

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Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., 4,495,380, Cl. 174-138.00D.

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Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.

Makabe, Seigo. Hairbrush device. 4,494,269, Cl. 15-203.000.

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Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., 4,495,492, Cl. 340-783.000.

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Malevanny, Vladimir P.: *See*—
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Malof, A. Paul. Cutting tool insert assembly for shears. 4,494,428, Cl. 83-389.000.

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Schneider, John R.; and Mangione, Joseph F., 4,495,071, Cl. 210-230.000.

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Graf, Michael, 4,494,999, Cl. 148-2.000.

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Marcus, Michael A., to Eastman Kodak Company. Acoustic transducers for acoustic position sensing apparatus. 4,494,841, Cl. 354-21.000.

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Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., 4,495,200, Cl. 424-286.000.

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Dolak, Terence M.; and Martin, Tellis A., 4,495,194, Cl. 514-323.000.

Masak, Raymond J., to United States of America, Air Force. Multiple loop sidelobe canceller. 4,495,502, Cl. 343-380.000.

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Mason, Ross S.; and Ellis, Peter J., to New Zealand Government Property Corporation. Remote sensing instrument. 4,495,416, Cl. 250-338.000.

Massachusetts Institute of Technology: *See*—
Horwitz, Christopher M., 4,495,090, Cl. 252-372.000.

Masse, Joseph H. Apparatus for cutting glass. 4,494,444, Cl. 83-886.000.

Master Modular Homes, Inc.: *See*—
Del Valle, Jamie L., 4,495,131, Cl. 264-256.000.

Masuda, Minoru: *See*—
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.

Masuda, Teruo; and Yamaguchi, Kazuyuki, to France Bed Co., Ltd. Tilting health table apparatus. 4,494,532, Cl. 128-71.000.

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Masuno, Katsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition system for internal combustion engine. 4,494,519, Cl. 123-615.000.

Mathes, H. Bernard, to United States of America, Navy. Axial acoustic wave attenuator for ramjets. 4,494,625, Cl. 181-213.000.

Matievich, Michael. Firearm capable of firing different-sized cartridges. 4,494,332, Cl. 42-77.000.

Matlock, Gordon E. Cross tie end plating machine. 4,494,685, Cl. 227-41.000.

Matsegora, Evgeny A.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.

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Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Matsuda, Ikuo: *See*—
Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.

Matsui, Kazuhiro, to Kitagawa Industries Co., Ltd. Spacer for wiring boards and assembled structure thereof. 4,495,548, Cl. 361-413.000.

Matsui, Kazuma: *See*—
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.

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Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.

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Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.

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Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,495,467, Cl. 324-244.000.

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Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
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Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.
Matsunaga, Yukio A.: *See*—
Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., 4,495,124, Cl. 264-130.000.
Matsunawa, Masahiko; and Abe, Yoshinori, to Konishiroku Photo Industry Co., Ltd. Recording apparatus and method of picture image. 4,495,522, Cl. 358-280.000.
Matsunawa, Masahiko: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
Matsuno, Tadaaki, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus with bulk and fine feed. 4,494,619, Cl. 177-25.000.
Matsuoka, Kazunori: *See*—
Konishi, Hideo; Matsuoka, Kazunori; and Gouya, Takao, 4,495,650, Cl. 455-144.000.
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Hatada, Kenzo; and Kitahiro, Isamu, 4,494,688, Cl. 228-180.00A.
Nakamura, Tsuneshi; and Kikuchi, Tatsuro, 4,495,546, Cl. 361-398.000.
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Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, to Nippon Oil Company Ltd. Ethylene polymer blend compositions. 4,495,334, Cl. 525-240.000.
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, to Sony Corporation. Automatic assembling apparatus. 4,494,298, Cl. 29-563.000.
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Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, 4,494,857, Cl. 355-3.0CH.
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Matthews, Leslie N. Boat hull. 4,494,477, Cl. 114-287.000.
Matuoka, Hirosi, to Nippondenso Co., Ltd. Windshield wiper driving device. 4,494,421, Cl. 74-600.000.
Maudal, Inge, to General Dynamics, Pomona Division. High acceleration support and positioning device. 4,494,460, Cl. 102-293.000.
Maurel, Pierre, to Uranium Pechiney Ugine Kuhlmann. Extraction of arsenic in solution in liquors containing alkali metal carbonate, sulphate and possibly hydroxide, and at least one of the metals vanadium, uranium and molybdenum. 4,495,159, Cl. 423-87.000.
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Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, 4,495,078, Cl. 252-62.200.
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Wissler, Josef H., 4,495,096, Cl. 260-112.00B.
May, William A.: *See*—
Sebenik, Roger F.; LaValle, Pablo P.; Laferty, John M.; and May, William A., 4,495,157, Cl. 423-54.000.
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Norman, Anthony W.; and Mayer, Eberhard, 4,495,181, Cl. 514-167.000.
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Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, to Montecatini Edison S.p.A. Components of catalysts for the polymerization of olefins. 4,495,338, Cl. 526-125.000.
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Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.
Yahiro, Tetsuji; and Ishimi, Haruyoshi, 4,494,494, Cl. 123-55.0VS.
Mazur, Robert H.: *See*—
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McCabe, Francis J. Insulated lay-in diffuser. 4,494,449, Cl. 98-40.050.
McCarthy, Bruce C., to USM Corporation. Heat-fusible-expandable mastic for automobile floor pans. 4,495,240, Cl. 428-319.100.
McCarthy, James P.; and Byler, Richard E., to Ford Motor Company. Automatic transmission control for an automotive vehicle driveline having fail-safe logic. 4,494,423, Cl. 74-869.000.
McCullough, Timothy J. Meat trimming knife. 4,494,311, Cl. 30-276.000.
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Lewis, John R.; McCurdy, Andrew; and Gaudet, Arthur D., 4,494,821, Cl. 350-6.500.
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Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., 4,495,598, Cl. 364-900.000.
McDonough, Kevin C., to Texas Instruments Incorporated. Microcomputer having separate access to complete microcode words and partial microcode words. 4,495,563, Cl. 364-200.000.
McElhenny, Stuart W.: *See*—
Black, Kenneth G.; and McElhenny, Stuart W., 4,495,449, Cl. 318-60.000.
McFarland, Lorrell C. Vapor driven power system. 4,494,379, Cl. 60-671.000.
McGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., to Raycon Corporation. Electronic depth controller for EDM apparatus. 4,495,394, Cl. 219-69.00C.
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McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, 4,494,766, Cl. 280-444.000.
McHugh, Edward L.; McHugh, James C.; McHugh, Gerard J.; Gallagher, William; and Schmidt, David, to McHugh Brothers Crane Rentals, Inc. Trailer for carrying large vehicles. 4,494,766, Cl. 280-444.000.
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Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., 4,495,204, Cl. 426-16.000.
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Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.
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Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.
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Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.
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Dolak, Terence M.; and Martin, Tellis A., 4,495,194, Cl. 514-323.000.
Kreighbaum, William E.; and Comer, William T., 4,495,352, Cl. 544-284.000.
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Hutson, Floyd E., 4,494,534, Cl. 128-80.00F.
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Archibald, G. Kent, 4,494,541, Cl. 123-303.130.
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Little, Charles A., III; and Patterson, Raymond B., III, 4,494,551, Cl. 128-696.000.
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., to Institut Elektrosvarki Imeni E.O.Patona. Method for electroslag welding with consumable plate electrodes. 4,495,395, Cl. 219-73.100.
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Rymarchyk, Nicholas M., Jr.; and Meinert, Leo L., 4,494,737, Cl. 266-281.000.
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Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
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Ruger, William B.; and Melcher, Roy L., 4,494,330, Cl. 42-16.000.
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Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.

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Alexander, Jose, 4,495,180, Cl. 514-46.000.
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.

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Bernhard, Horst; and Esselborn, Reiner, 4,494,993, Cl. 106-291.000.

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Moller, Karl-Heinz, 4,495,000, Cl. 148-9.00R.

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Larsen, Hans-Ole, 4,495,313, Cl. 523-106.000.

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Campillo, Christian; and Michaud, Jean-Pierre, 4,494,767, Cl. 280-612.000.

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Frias, Ronald J.; Jagielski, David; and Schetter, Nicholas R., 4,494,859, Cl. 355-5.000.

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Svoboda, Edward J., 4,494,398, Cl. 72-393.000.

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Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

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Ehrhardt, Heinz; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,495,191, Cl. 514-383.000.

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Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

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Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,495,185, Cl. 514-242.000.

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Minami, Kazuo, to Tokyo Institute of Technology. Cold-cathode magnetron injection gun. 4,495,442, Cl. 315-3.000.

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Minato, Yoshihiko: *See*—
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.

Minnesota Mining and Manufacturing Company: *See*—
Nepper, Robert F.; and Solyntjes, Alan J., 4,494,860, Cl. 355-13.000.
Pannocchia, Mario, 4,495,273, Cl. 430-510.000.

Minolta Camera Kabushiki Kaisha: *See*—
Masumoto, Hisayuki; and Ogino, Shuji, 4,494,828, Cl. 350-427.000.
Namba, Yasuhiro, 4,494,849, Cl. 354-406.000.
Tanaka, Atsuyuki, 4,494,862, Cl. 355-14.00C.

Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., to Dayco Corporation. Endless power transmission V-belt construction and method of making the same. 4,494,947, Cl. 474-251.000.

Mishima, Kunio: *See*—
Tominaga, Masahiro; Nakamura, Kenichi; and Mishima, Kunio, 4,495,234, Cl. 428-122.000.

Mita, Akio; and Kashiwabara, Susumu, to Director-General of Agency of Industrial Science and Technology. Water-absorbent. 4,495,082, Cl. 252-194.000.

Mita Industrial Co., Ltd.: *See*—
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,495,267, Cl. 430-106.600.
Miyakawa, Nobuhiro, 4,495,268, Cl. 430-122.000.

Mitchell, Ralph C., Jr., to International Business Machines Corporation. PLA With time division multiplex feature for improved density. 4,495,590, Cl. 364-716.000.

Mite Corporation: *See*—
Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., 4,495,380, Cl. 174-138.00D.

Mitsubishi Chemical Industries, Limited: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Itagaki, Takaharu; Ouchi, Hidenaga; and Shimura, Akihiro, 4,495,250, Cl. 428-520.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Hamano, Isao, 4,494,414, Cl. 74-7.00E.
Kagawa, Eiichi, 4,495,569, Cl. 364-200.000.
Masuno, Katsuyoshi, 4,494,519, Cl. 123-615.000.
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.
Nozaki, Tadashi, 4,494,918, Cl. 418-260.000.
Uchida, Ryohei; and Fujii, Toshifumi, 4,495,525, Cl. 360-10.300.

Mitsubishi Heavy Industries, Ltd.: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Danno, Yoshiaki; and Murakami, Nobuaki, 4,494,503, Cl. 123-198.00F.
Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, 4,494,502, Cl. 123-198.00F.

Mitsubishi Oil Company, Limited: *See*—
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Mitsuhashi, Masakazu: *See*—
Ohnishi, Haruo; and Mitsuhashi, Masakazu, 4,495,282, Cl. 435-68.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Honda, Tadatoshi; and Hosono, Yoichi, 4,495,362, Cl. 560-20.000.

Miu, Ming T.: *See*—
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, 4,495,571, Cl. 364-200.000.

Miyai, Hitoshi: *See*—
Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, 4,495,600, Cl. 364-900.000.

Miyaji, Masuo: *See*—
Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, 4,495,020, Cl. 156-314.000.

Miyakawa, Nobuhiro, to Mita Industrial Co., Ltd. Electrophotographic process using transfer-type one-component magnetic developer. 4,495,268, Cl. 430-122.000.

Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, to Teijin Seiki Co., Ltd. Yarn winding apparatus. 4,494,702, Cl. 242-18.00R.
Miyako, Haruyoshi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Tone arm control mechanism. 4,495,612, Cl. 369-216.000.
Miyamaru, Tsuneo: *See*—
Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, 4,494,723, Cl. 248-635.000.
Miyanaka, Motoshi: *See*—
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, 4,494,924, Cl. 431-78.000.
Miyano, Takayoshi: *See*—
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, 4,494,681, Cl. 222-485.000.
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, to Olympus Optical Co., Ltd. Collator. 4,494,748, Cl. 271-288.000.
Miyauchi, Keinosuke: *See*—
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Inouye, Shigeharu, 4,495,358, Cl. 548-550.000.
Miyauchi, Teruo: *See*—
Kanai, Shunichiro; and Miyauchi, Teruo, 4,494,722, Cl. 248-621.000.
Miyazaki, Kunio: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,494,623, Cl. 180-230.000.
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degradable styrene resin compositions. 4,495,315, Cl. 523-125.000.
Miyoshi, Mituji: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.
Mizukami, Fujio: *See*—
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.
Mobil Oil Corporation: *See*—
Calvert, Robert B.; and Rollmann, Louis D., 4,495,166, Cl. 423-329.000.
Chibnik, Sheldon, 4,495,076, Cl. 252-38.000.
Goldstein, Theodore P., 4,495,041, Cl. 204-158.00R.
Hohensang, Lutz, 4,495,417, Cl. 250-343.000.
Kuehl, Guenter H., 4,495,303, Cl. 502-62.000.
Venkat, Chaya; and Walsh, Dennis E., 4,494,961, Cl. 44-57.000.
Wagner, John R., Jr.; and Hein, Carl C., 4,495,027, Cl. 156-244.110.
Yan, Tsoung-yuan; and Lozano, Raymond L., 4,495,152, Cl. 422-159.000.
Mochida Seiyaku Kabushiki Kaisha: *See*—
Ohnishi, Haruo; and Mitsuhashi, Masakazu, 4,495,282, Cl. 435-68.000.
Moden, James R., to United States of America, Navy. Dual electrochemical system. 4,495,256, Cl. 429-17.000.
Moiny, Fernand: *See*—
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Moisar, Erik: *See*—
Becker, Manfred; Klotzer, Sieghart; and Moisar, Erik, 4,495,277, Cl. 430-567.000.
Molin, Soeren: *See*—
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,495,287, Cl. 435-231.000.
Moller, Karl-Heinz, to Messer Griesheim GmbH. Device for cutting a strip cast in a continuous casting machine. 4,495,000, Cl. 148-9.00R.
Molnar, Kalman, to National Semiconductor Corporation. Circuit arrangement for controlled interconnection of signal sources and signal destinations. 4,495,497, Cl. 340-825.630.
Molson Companies Limited, The: *See*—
Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., 4,495,204, Cl. 426-16.000.
Mongan, Edwin L., Jr.: *See*—
Gramm, Jeffrey S.; Mongan, Edwin L., Jr.; and Sheeran, Patrick J., 4,495,108, Cl. 260-453.700.
Monopoli, Eileen F., executrix: *See*—
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.
Monopoli, Richard V., deceased: *See*—
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased, 4,495,577, Cl. 364-424.000.
Monsanto Co.: *See*—
Franz, John E., 4,495,363, Cl. 560-155.000.
Montecatini Edison S.p.A.: *See*—
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.
Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, to Paul Wurth S.A. Process and apparatus for granulation of slag. 4,494,971, Cl. 65-19.000.
Mooiweer, Gerben D., to Douwe Egberts Koninklijke Tabaksfabriek Koffiebranderijen Theehandel N.V. Process for the decaffeination of green coffee beans. 4,495,211, Cl. 426-422.000.
Moore Business Forms, Inc.: *See*—
Chao, Hung-Ya, 4,495,509, Cl. 346-215.000.
Moore, Dan T., III; Fischer, Michael F.; and Herceg, Laurie S., to Dan T. Moore Co., The. Automobile body panel hole closure. 4,494,671, Cl. 220-256.000.
Moore, Leslie G.; and Lee, Te-Hsung, to Eastman Kodak Company. Film video player having flash illuminated area image sensor and single frame CCD image sensor for use therewith. 4,495,516, Cl. 358-54.000.
Moote, Truman P.; and Reed, Robert L., to Standard Oil Company, The. Removal and recovery of magnesium, strontium and barium from brines. 4,495,160, Cl. 423-158.000.
Mora, Camillo C., to Camillo Corvi S.p.A. Organometal complexes of N-cyclohexyl-piperazino acetamides or propionamides, preparation and use thereof as antiulcer-antisecretive-buffering drugs. 4,495,186, Cl. 514-255.000.
Moreau, Jacques-Pierre: *See*—
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,495,193, Cl. 514-385.000.
Morgan, Thomas W.: *See*—
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,494,858, Cl. 355-3.0TR.
Mori, Hirohumi: *See*—
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,495,315, Cl. 523-125.000.
Mori, Kei. Sunlight direction sensor. 4,495,408, Cl. 250-203.00R.
Moriguchi, Fujio; and Kurata, Masami, to Fuji Xerox Co., Ltd. Multicolor transfer heat-sensitive recording apparatus. 4,495,507, Cl. 346-76.0PH.
Moriguchi, Masakazu: *See*—
Tsubota, Motohiko; and Moriguchi, Masakazu, 4,495,270, Cl. 430-218.000.
Morii, Akira: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.
Morikawa, Kouji; and Suzuki, Hitoshi, to Fuji Jukogyo Kabushiki Kaisha. Intake system for an automotive engine. 4,494,493, Cl. 123-52.00M.
Morimoto, Kazuo: *See*—
Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, 4,495,009, Cl. 148-128.000.
Morimoto, Yoshiro: *See*—
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000.
Morino, Toshiharu: *See*—
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.
Morishita, Hirosada: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Morita, Natsuo. Reversible caster device having brake mechanism. 4,494,272, Cl. 16-35.00R.
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for yarn piecing in a ringless spinning machine. 4,494,371, Cl. 57-263.000.
Moriyama, Masaru: *See*—
Sasamura, Kohhei; and Moriyama, Masaru, 4,495,528, Cl. 360-40.000.
Morman, William H. Slow wave antenna. 4,495,503, Cl. 343-746.000.
Morris, Joseph W.: *See*—
Funke, Maurice F.; and Morris, Joseph W., 4,494,422, Cl. 74-867.000.
Morrison, Alex J. Apparatus for constructing cylindrical storage tanks. 4,494,291, Cl. 29-281.400.
Morrow, Winston G., to Spinal Dynamics, Inc. Head and neck cushion. 4,494,261, Cl. 5-436.000.
Mosebach, Wilhelm: *See*—
Breidenbach, Dieter; Mosebach, Wilhelm; and Dellmann, Winfried, 4,495,031, Cl. 201-28.000.
Moser, Kurt, to Develop Dr. Eisbein GmbH & Co. Copying machine with a cassette guide. 4,494,746, Cl. 271-164.000.
Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., to Halliburton Company. Electronic data compressor. 4,495,639, Cl. 381-51.000.
Moss Rosenberg Verft A/S: *See*—
Eriksen, Tor, 4,494,475, Cl. 114-230.000.
Mostek Corporation: *See*—
Sheppard, Douglas P., 4,495,602, Cl. 365-104.000.
Motorenfabrik Hatz GmbH & Co. KG: *See*—
Kochanowski, Hans-Alfred, 4,494,492, Cl. 123-41.840.
Motorola, Inc.: *See*—
Anderson, George F.; and Burt, Dan L., 4,495,222, Cl. 427-89.000.
Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., 4,495,647, Cl. 455-38.000.
Bynum, Byron G., 4,495,536, Cl. 361-91.000.
McKenzie, James A., 4,495,425, Cl. 307-297.000.
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., 4,495,506, Cl. 343-909.000.
Wells, Raymond C., 4,494,523, Cl. 125-16.00R.
Mueller, Norbert: *See*—
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, 4,495,246, Cl. 428-403.000.
Mukoh, Akio: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.
Munekata, Seiji: *See*—
Yamabe, Masaaki; and Munekata, Seiji, 4,495,364, Cl. 560-180.000.
Murakami, Hiroyasu: *See*—
Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,495,432, Cl. 310-328.000.

Murakami, Katsuyuki; Hirakata, Kaoru; Shimoda, Shinichi; and Itai, Reiichi, to Japan Carlit Co., Ltd., The. Apparatus for electrolysis of saline water. 4,495,048, Cl. 204-267.000.

Murakami, Nobuaki: *See*—
Danno, Yoshiaki; and Murakami, Nobuaki, 4,494,503, Cl. 123-198.00F.
Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, 4,494,502, Cl. 123-198.00F.

Murakami, Shinjiro; Hashimoto, Osamu; Morimoto, Kazuo; and Hyodo, Kaneaki, to Kawasaki Steel Corporation; and Mitsubishi Heavy Industries, Ltd. Method of cooling cold steel strip with cooling rolls. 4,495,009, Cl. 148-128.000.

Murakami, Shoichi: *See*—
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.

Muramatsu, Hiroshi: *See*—
Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, 4,495,535, Cl. 360-96.300.

Murata, Hideki: *See*—
Kawakami, Sota; Murata, Hideki; Matsunaga, Satoshi; and Kiriki, Toshihiko, 4,495,345, Cl. 528-372.000.

Murata Kikai Kabushiki Kaisha: *See*—
Deno, Koji, 4,494,366, Cl. 57-22.000.
Mima, Hiroshi, 4,494,368, Cl. 57-22.000.

Murata, Masataka: *See*—
Takimoto, Masaaki; Saida, Takashi; and Murata, Masataka, 4,495,276, Cl. 430-527.000.

Murphy, Desmond L., to Tektronix. Termination for high impedance attenuator. 4,495,458, Cl. 324-57.00R.

Murray, Philip F.: *See*—
Donatelli, Thomas F.; and Murray, Philip F., 4,495,326, Cl. 524-533.000.

Muschelknautz, Edgar; and Rink, Norbert, to Bayer Aktiengesellschaft. Apparatus for production of fiber mats. 4,494,970, Cl. 65-9.000.

Mustang Tripsaver, Inc.: *See*—
Jones, Kenneth R., 4,494,615, Cl. 173-119.000.

Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, to Kyowa Hakko Kogyo Co., Ltd. 1-Substituted 1,4-dihydropyridines. 4,495,192, Cl. 514-318.000.

Myers, John A., to North Carolina Central University. 2H-isoindolediones, their synthesis and use as radiosensitizers. 4,494,547, Cl. 128-659.000.

Mylander, Richard H.: *See*—
Bellah, Glen R.; Mylander, Richard H.; Idelman, Lloyd B.; and Coons, Robert R., 4,494,418, Cl. 74-475.000.

Myokan, Isao: *See*—
Matsuzaki, Masatoshi; Yamazaki, Toshinori; Myokan, Isao; Shima, Tetsuo; and Nomori, Hiroyuki, 4,495,262, Cl. 430-58.000.

Nagai, Teruhisa; and Naito, Takemi, to Hitachi, Ltd. Method of production of cross-fin type heat exchanger. 4,494,288, Cl. 29-157.30A.

Naganawa, Hiroshi: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.

Nagao, Yoshimitsu: *See*—
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.

Nagata, Koichi: *See*—
Oda, Takashi; and Nagata, Koichi, 4,495,429, Cl. 307-491.000.

Nagata, Yoshihiro, to Kabushiki Kaisha Komatsu Seisakusho. Steering control system for crawler tractor type vehicles. 4,494,621, Cl. 180-6.200.

Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Air-conditioner for an automobile. 4,494,383, Cl. 62-196.200.

Nagaura, Yoshiaki. Lens-shaped article or the like and a method and apparatus for the manufacture of same. 4,494,338, Cl. 51-33.00W.

Nagel, Gerald D. Method of conditioning hair. 4,494,557, Cl. 132-7.000.

Nagoh, Chiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying apparatus. 4,495,521, Cl. 358-256.000.

Nagy, Peter: *See*—
Cruzen, Gerald S.; Izadi, Said; and Nagy, Peter, 4,494,287, Cl. 29-156.80R.

Nahara, Akira: *See*—
Arai, Yoshihiro; and Nahara, Akira, 4,495,242, Cl. 428-336.000.

Naito, Takemi: *See*—
Nagai, Teruhisa; and Naito, Takemi, 4,494,288, Cl. 29-157.30A.

Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, to Takeda Chemical Industries, Ltd. Primer for bonding polyester plastics. 4,495,020, Cl. 156-314.000.

Nakada, Isao: *See*—
Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, 4,495,595, Cl. 364-900.000.

Nakagami, Tatsuro: *See*—
Endo, Norio; Danno, Yoshiaki; Nakagami, Tatsuro; and Murakami, Nobuaki, 4,494,502, Cl. 123-198.00F.

Nakagawa, Junji: *See*—
Shimizu, Tohru; and Nakagawa, Junji, 4,495,084, Cl. 252-301.170.

Nakagawa, Nobuaki: *See*—
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, 4,495,151, Cl. 422-102.000.

Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, to Takeda Riker Co. Ltd. Glitch detecting and measuring apparatus. 4,495,621, Cl. 371-6.000.

Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, to Seikagaku Kogyo Co., Ltd. Method for determining bacterial endotoxin and kit therefor. 4,495,294, Cl. 436-502.000.

Nakahara, Tsuguji: *See*—
Shimizu, Kimihiro; Nakahara, Tsuguji; and Kinoshita, Taketoshi, 4,495,285, Cl. 435-215.000.

Nakajima, Kunio: *See*—
Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, 4,495,149, Cl. 422-65.000.

Nakajima, Takayuki: *See*—
Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, 4,495,621, Cl. 371-6.000.

Nakamura, Joji: *See*—
Tamaki, Hiroaki; and Nakamura, Joji, 4,494,613, Cl. 173-74.000.

Nakamura, Kenichi: *See*—
Tominaga, Masahiro; Nakamura, Kenichi; and Mishima, Kunio, 4,495,234, Cl. 428-122.000.

Nakamura, Mitsuo: *See*—
Fukushima, Tatsuhisa; Kasai, Yoshiaki; and Nakamura, Mitsuo, 4,495,579, Cl. 364-431.070.

Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, to Toyota Jidosha Kabushiki Kaisha; and Koyo Seiko Kabushiki Kaisha. Variable valve-timing apparatus in an internal combustion engine. 4,494,495, Cl. 123-90.150.

Nakamura, Norihiko; and Baika, Toyokazu, to Toyota Jidosha Kabushiki Kaisha. Variable valve-timing apparatus in an internal-combustion engine. 4,494,496, Cl. 123-90.150.

Nakamura, Takeshi; Okamoto, Seiji; and Hirayama, Kazuyoshi, to Sharp Kabushiki Kaisha. Liquid crystal display with small impedance orienting film. 4,494,824, Cl. 350-334.000.

Nakamura, Tsuneshi; and Kikuchi, Tatsuro, to Matsushita Electric Industrial Co., Ltd. Hybrid integrated circuit component and printed circuit board mounting said component. 4,495,546, Cl. 361-398.000.

Nakamura, Yukio: *See*—
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, 4,495,474, Cl. 331-11.000.

Nakano, Kozo, to Kabushiki Kaisha Morita Seisakusho. Radiographic apparatus for photographing entire jaws. 4,495,632, Cl. 378-40.000.

Nakatani, Mitsuo: *See*—
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, 4,495,218, Cl. 427-53.100.

Nakayama, Tadakazu; Tsuruoka, Ryozo; and Matsumoto, Masaki, to Hitachi, Ltd. Monitoring system for monitoring state of nuclear reactor core 4,495,142, Cl. 376-251.000.

Nakayashiki, Susumu; Nakada, Isao; Kida, Masahiko; Hashimoto, Toyokazu; and Yagyu, Kazuo, to Hitachi, Ltd. Method and system of loop transmission. 4,495,595, Cl. 364-900.000.

Namba, Akihiro; and Sakai, Mitsugu, to Olympus Optical Co., Ltd. Device for diagnosing body cavity interiors with supersonic waves. 4,494,549, Cl. 128-660.000.

Namba, Yasuhiro, to Minolta Camera Kabushiki Kaisha. Focus detecting device for a camera. 4,494,849, Cl. 354-406.000.

Napolitano, Pellegrino E., to Hudson Engineering Company. Self-priming system for liquid pumps. 4,494,560, Cl. 137-117.000.

Naramura, Masaru, to Nissan Motor Company, Limited. Deceleration control device for an internal combustion engine. 4,494,505, Cl. 123-325.000.

Narita, Kinzo: *See*—
Wakabayashi, Shozo; and Narita, Kinzo, 4,494,636, Cl. 192-41.00A.

Nash, Robert W.; Andre, Paul R.; and Knoblock, Dennis F., to William Nash Company, Inc. Fluid coupling. 4,494,775, Cl. 285-26.000.

Nashed, Mina A.: *See*—
Anderson, Laurens; and Nashed, Mina A., 4,495,346, Cl. 536-18.500.

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Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, 4,495,218, Cl. 427-53.100.

National Manufacturing Co.: *See*—
Johnston, James R., 4,494,354, Cl. 52-814.000.

National Semiconductor Corporation: *See*—
Molnar, Kalman, 4,495,497, Cl. 340-825.630.

Nauchno-Proizvodstvennoe Obiedinenie Po Tekhnologii Mashinostroenia (NPO Tsniitmash): *See*—
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.

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Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., 4,494,871, Cl. 356-315.000.

Nauroth, Peter; Esch, Heinz; and Turk, Gunter, to Degussa Aktiengesellschaft. Precipitated silicas having high structure and process for their preparation. 4,495,167, Cl. 423-339.000.

Neenan, Thomas X.: *See*—
Allcock, Harry R.; Austin, Paul E.; and Neenan, Thomas X., 4,495,174, Cl. 424-78.000.

Neff, Steven W.; and Borsh, Richard J., to Thysen-Bornemisza Inc. Connector fitting for electrical box. 4,494,779, Cl. 285-159.000.

Nelson, Ann L.: *See*—
Nelson, Ralph E.; Nelson, Ann L.; Bogner, Evelyn J.; and Bogner, Paul M., 4,494,652, Cl. 206-366.000.

Nelson, Ralph E.; Nelson, Ann L.; Bogner, Evelyn J.; and Bogner, Paul M., to Winfield Industries. Container for sharps. 4,494,652, Cl. 206-366.000.

Nepper, Robert F.; and Solyntjes, Alan J., to Minnesota Mining and Manufacturing Company. Control circuitry for a continuous copy machine. 4,494,860, Cl. 355-13.000.

Neri, Carlo; and Buonomo, Franco, to ANIC S.p.A. Process for isomerizing styrene oxide or homologues to β-phenylaldehydes. 4,495,371, Cl. 568-427.000.
Neumann, Hans D. Apparatus and method for photometric measurement of oil present on human skin. 4,494,869, Cl. 356-36.000.
Neumann, Helmut: *See*—
Ormanns, Siegfried; and Neumann, Helmut, 4,495,495, Cl. 340-825.450.
Neurath, A. Robert, to New York Blood Center, Inc. Immunoassays using support-containing separate antigens and antibodies derived from an immune complex. 4,495,295, Cl. 436-518.000.
Neurath, A. Robert; and Strick, Nathan, to New York Blood Center, Inc. Labeled anti-hapten antibodies and their use as a universal reagent for solid phase radio- and/or enzyme-immunoassays. 4,495,296, Cl. 436-530.000.
Neve, Arlene F., administratrix: *See*—
Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, 4,495,140, Cl. 376-207.000.
New Nippon Electric Co., Ltd.: *See*—
Katayama, Hiroomi; and Hirosawa, Yoshiaki, 4,494,518, Cl. 123-612.000.
New York Blood Center, Inc.: *See*—
Neurath, A. Robert, 4,495,295, Cl. 436-518.000.
Neurath, A. Robert; and Strick, Nathan, 4,495,296, Cl. 436-530.000.
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Mason, Ross S.; and Ellis, Peter J., 4,495,416, Cl. 250-338.000.
Newberry, Alfred L.; and Lassak, Francis A., to Magnetic Peripherals Incorporated. Process for producing high precision apertures in plastic components. 4,495,129, Cl. 264-235.000.
Newton, Kevin H.: *See*—
Graef, Harry T.; and Newton, Kevin H., 4,494,747, Cl. 271-263.000.
Newton, Steven A.: *See*—
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.
Ng, Tai-Wing; Wright, Arthur P. G.; Blaser, Eric; and Ambike, Suhas. Preparation of aluminum hydroxycarbonate gels by a continuous process. 4,495,087, Cl. 252-315.700.
NGK Insulators, Ltd.: *See*—
Kaneno, Masayuki; and Kajihara, Takehiro, 4,495,116, Cl. 264-1.200.
Nguyen, Duyet H.: *See*—
Ballegeer, Jean C.; and Nguyen, Duyet H., 4,495,573, Cl. 364-200.000.
Nguyen, Hue V.: *See*—
George, David J.; Nguyen, Hue V.; and Yardy, Raymond, 4,495,623, Cl. 371-38.000.
Nguyen, Xuan T., to Domtar Inc. Fluidized bed sulfur dioxide removal. 4,495,163, Cl. 423-244.000.
NHK Spring Co., Ltd.: *See*—
Kato, Katuo, 4,494,634, Cl. 188-380.000.
Niagara Blower Company: *See*—
Kals, Walter, 4,494,599, Cl. 165-67.000.
Niibori, Kenji; and Suda, Hisao, to Seiwa Kagaku Kabushiki Kaisha. Apparatus for winding and unwinding an elongated flexible member. 4,494,707, Cl. 242-67.200.
Nikken Chemicals Co., Ltd.: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
Nikolaeva, Lilia F.: *See*—
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.
Nilsson, Einar W. Straightening machines and methods. 4,494,394, Cl. 72-98.000.
Ning, Tak H.: *See*—
Isaac, Randall D.; and Ning, Tak H., 4,495,512, Cl. 357-34.000.
Nio, Satoru; Sato, Shinobu; Fujii, Hajime; and Hamashima, Toyoji, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Robot locus control system. 4,495,588, Cl. 364-513.000.
Nippon Chemiphar Co., Ltd.: *See*—
Ikami, Hideo, 4,495,118, Cl. 264-25.000.
Nippon Electric Co., Ltd.: *See*—
Kikuchi, Yoshiyasu; Shutoh, Masamichi; Miyai, Hitoshi; and Itoh, Hidetoshi, 4,495,600, Cl. 364-900.000.
Oda, Takashi; and Nagata, Koichi, 4,495,429, Cl. 307-491.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iijima, Kenzaburo, 4,495,241, Cl. 428-328.000.
Suzuki, Yoshiaki, 4,495,611, Cl. 369-170.000.
Takamura, Masayuki; and Kurahashi, Kazuo, 4,494,832, Cl. 351-41.000.
Takamura, Masayuki; and Kurahashi, Kazuo, 4,494,833, Cl. 351-41.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Kunishima, Mamoru; Yabuuchi, Masahiko; Masuda, Minoru; Imazumi, Kikuo; and Hamano, Hiroaki, 4,495,348, Cl. 544-021.000.
Nippon Kogaku K.K.: *See*—
Maida, Osamu; Hasegawa, Hiroshi; Hagyuda, Nobuyoshi; and Iida, Yoshikazu, 4,494,851, Cl. 354-421.000.
Yaguchi, Kenichi; Ichikawa, Masaru; and Kinoshita, Takuji, 4,494,831, Cl. 351-41.000.
Nippon Oil Company Ltd.: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Noguchi, Yukio; and Yamagishi, Takashi, 4,495,299, Cl. 501-72.000.
Yamagishi, Takasi; and Noguchi, Yukio, 4,495,298, Cl. 501-55.000.
Nippon Soken, Inc.: *See*—
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, 4,494,597, Cl. 165-41.000.
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,495,467, Cl. 324-244.000.
Nippon Steel Corporation: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.
Nippondenso Co., Ltd.: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.
Kawamura, Setuo, 4,494,559, Cl. 137-116.500.
Matuoka, Hirosi, 4,494,421, Cl. 74-600.000.
Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, 4,494,943, Cl. 474-28.000.
Nishida, Katsumi, to Beltek Corporation. Circuit device for selecting station and tape in tape player with built-in radio. 4,495,607, Cl. 369-6.000.
Nishihara, Nobuyoshi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.
Nishii, Michiharu: *See*—
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. PLL Control circuit for recovery of data from audio disk. 4,495,474, Cl. 331-11.000.
Nishimoto, Hiroshi: *See*—
Minami, Takatoshi; and Nishimoto, Hiroshi, 4,495,410, Cl. 250-214.0AG.
Nishimoto, Yoshiharu: *See*—
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,495,249, Cl. 428-516.000.
Nishimura, Katsuji, to Sharp Kabushiki Kaisha. Cash accounting system. 4,495,627, Cl. 377-6.000.
Nishimura, Masanori: *See*—
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Nishizawa, Hiroshi: *See*—
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Nishizawa, Toshizo: *See*—
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.
Nissan Motor Company, Limited: *See*—
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.
Fukui, Osamu, 4,494,773, Cl. 280-775.000.
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000
Kanai, Shunichiro; and Miyauchi, Teruo, 4,494,722, Cl. 248-621.000.
Kanamori, Hiroshi, 4,494,326, Cl. 40-593.000.
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Midorikawa, Minoru, 4,495,153, Cl. 422-171.000.
Naramura, Masaru, 4,494,505, Cl. 123-325.000.
Omura, Yutaka, 4,494,790, Cl. 296-154.000.
Yasuhara, Seishi, 4,494,507, Cl. 123-357.000.
Nisshin Kogyo Kabushiki Kaisha: *See*—
Idesawa, Isao, 4,494,633, Cl. 188-329.000.
Niswonger, John O. Portable radial arm saw. 4,494,431, Cl. 83-471.300.
Nitto Electric Industrial Co., Ltd.: *See*—
Kakuhashi, Takeshi; and Tahara, Hiroshi, 4,495,524, Cl. 338-314.000.
Niwa, Hirosuke: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, to Director-General of the Agency of Industrial Science and Technology. Method for partial nuclear hydrogenation of aromatic hydrocarbon compounds and a hydrogenation catalyst therefor. 4,495,373, Cl. 585-269.000.
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, to Research Association of Synethtic Dyestuffs. Dye compositions for polyester fibers. 4,494,957, Cl. 8-639.000.
Nixon, John. Engine efficiency unit. 4,494,487, Cl. 123-1.00A.
Noble, Scott W.: *See*—
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Noboru, Nasu; and Tatsuo, Inada, to Kawakami Co., Ltd. Spreading equipment having selvage engaging independently rotated needle wheels. 4,494,740, Cl. 270-31.000.
Noguchi, Hiroki: *See*—
Fukami, Akira; Okamoto, Kunio; and Noguchi, Hiroki, 4,494,597, Cl. 165-41.000.
Noguchi, Yukio; and Yamagishi, Takashi, to Nippon Sheet Glass Co., Ltd. Thallium-containing optical glass composition. 4,495,299, Cl. 501-72.000.
Noguchi, Yukio: *See*—
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Nomori, Hiroyuki: *See—*
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Norman, Anthony W.; and Mayer, Eberhard, to University of California, The Regents of the. 1,25-Dihydroxy-24-oxo-vitamin D_3 and 1,23,25-trihydroxy-24-oxo-vitamin D_3 . 4,495,181, Cl. 514-167.000.
Normann, Richard W.: *See—*
Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., 4,494,818, Cl. 339-192.00R.
North American Philips Corporation: *See—*
Rao, N. Vasanth; and Shaulov, Avner, 4,495,441, Cl. 313-388.000.
North Carolina Central University: *See—*
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Northern Telecom Limited: *See—*
Dufresne, Gilles L.; Devlin, George V.; Campbell, Alexander F.; and Campbell, David, 4,495,545, Cl. 361-384.000.
Notelteirs, Victor R., to U.S. Philips Corporation. Electric lamp having a lamp cap which is connected without cement. 4,495,436, Cl. 313-318.000.
Novak, Pavel: *See—*
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Novatome: *See—*
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Nozaki, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Auxiliary radially shifting mechanism for vanes in a pump of the vane type. 4,494,918, Cl. 418-260.000.
Numata, Koji: *See—*
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Numata, Tatsuo, to Pioneer Electronic Corporation. Differential amplifier output leading circuit, and intermediate frequency amplifier using same. 4,495,469, Cl. 330-2.000.
Nuttall, Herbert E., Jr.: *See—*
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Nysted, Leonard N., to G. D. Searle & Co. Aminoalkyl steroids. 4,495,102, Cl. 260-239.500.
O M Industrial Co., Ltd.: *See—*
Hiraishi, Hideki, 4,494,673, Cl. 220-288.000.
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, to Yokohama Rubber Co. Ltd., The. Pressure-sensitive electrically conductive composite sheet. 4,495,236, Cl. 428-172.000.
O'Boyle, Matthew, to Windsor Medical, Inc. Method of making a member defining a lumen for a peristaltic pump and member produced by said method. 4,494,285, Cl. 29-156.40R.
OBrien, Garrett G.: *See—*
Benson, Michael R.; Hill, William D.; OBrien, Garrett G.; and Hollenbeck, Dennis W., 4,495,655, Cl. 455-603.000.
O'Brien, James W.; and Spevak, Frank, to Imperial Clevite Inc. Wear-resistant metallic article. 4,495,252, Cl. 428-555.000.
Oda, Takashi; and Nagata, Koichi, to Nippon Electric Co., Ltd. Limiter amplifier. 4,495,429, Cl. 307-491.000.
O'Fee, Robert P.: *See—*
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Officine Savio S.p.A.: *See—*
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Ogaki, Kohei: *See—*
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Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
Ogasawara, Yoshinari, to CKD Corporation. Condensate discharging apparatus. 4,494,561, Cl. 137-204.000.
Ogawa, Masahiko, to Canon Kabushiki Kaisha. Distance measuring device. 4,494,848, Cl. 354-403.000.
Oger, Jacques: *See—*
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Ogg, Richard. Plywood bending. 4,495,019, Cl. 156-222.000.
Ogino, Shuji: *See—*
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Ogino, Teiji, to Enuma Chain Manufacturing Co., Ltd. Roller chain link construction and method of manufacture. 4,494,945, Cl. 474-231.000.
O'Grady, Thomas R.: *See—*
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Ohashi, Mikio: *See—*
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Ohga, Kunihiko: *See—*
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Ohhashi, Akinami, to Tokyo Shibaura Denki Kabushiki Kaisha. Computed tomography device. 4,495,645, Cl. 382-6.000.
Ohisa, Takayuki: *See—*
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.
Ohlsson, Stig L.; and Berthou, Jan-Olov K., to Perstorp AB. Porous ceramic abrasive wheel or ceramic filter. 4,494,964, Cl. 51-296.000.
Ohmachi, Kazuhiko: *See—*
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Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Antilock brake system with separate front- and rear-wheel safety means. 4,494,801, Cl. 303-92.000.
Ohnishi, Haruo; and Mitsuhashi, Masakazu, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo; and Mochida Seiyaku Kabushiki Kaisha. Process for producing target cell lysis factor and uses therewith. 4,495,282, Cl. 435-68.000.
Ohno, Junichi; and Ohta, Takao, to Tokyo Shibaura Denki Kabushiki Kaisha. Implanting yttrium and oxygen ions at semiconductor/insulator interface. 4,494,996, Cl. 148-1.500.
Ohno, Katsutoshi: *See—*
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Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat shrinkable multi-layered laminate film. 4,495,249, Cl. 428-516.000.
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, to Toyo Jozo Kabushiki Kaisha. Element for immunoassay. 4,495,151, Cl. 422-102.000.
Ohyama, Yoshishige: *See—*
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Oil States Industries, Inc.: *See—*
Britton, Frederick G.; and Clark, Thomas A., 4,494,738, Cl. 267-140.000.
Okamoto, Kunio: *See—*
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Okamoto, Seiji: *See—*
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O'Keeffe, Lonnie. Storage cabinet with parts sorter. 4,494,804, Cl. 312-211.000.
Oki Electric Industry Co., Ltd.: *See—*
Yoshioka, Kentaro, 4,494,304, Cl. 29-578.000.
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Hayama, Nobuhiro; Kinjyo, Masasige; Okimoto, Haruo; and Matsuda, Ikuo, 4,494,506, Cl. 123-348.000.
Okuda, Yosiro; and Harada, Tosiharu, to Toda Kogyo Corp. Process for producing acicular magnetite or acicular maghemite. 4,495,164, Cl. 423-266.000.
Okumura, Takeo: *See—*
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Okunaka, Masaaki: *See—*
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Okunev, Rostan A.: *See—*
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Okutani, Tetsuya: *See—*
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Oldenkamp, Jerry. Integral housing member for removing magnetic articles from a flow of loosely packed material and method. 4,494,657, Cl. 209-636.000.
Olds, Peter J.; and Blakeway, Richard S. Body support. 4,494,260, Cl. 5-446.000.
Olin Corporation: *See—*
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Oliver, Larry R.: *See—*
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Olsson, Jan. Enclosure for animals. 4,494,733, Cl. 256-10.000.
Olympus Optical Co., Ltd.: *See—*
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Omori, Shigenori: *See*—
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Omron Tateisi Electronics Co.: *See*—
Kitao, Zenichi; and Koizumi, Haruyuki, 4,495,391, Cl. 200-153.00J.

Omura, Yutaka, to Nissan Motor Company, Limited. Rain gutter arrangement for automotive vehicle. 4,494,790, Cl. 296-154.000.

Onishi, Yasunobu: *See*—
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.

Ono, Hitoshi: *See*—
Imazeki, Shuji; Mukoh, Akio; Morishita, Hirosada; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitoshi, 4,495,083, Cl. 252-299.100.

Ono, Kimizo: *See*—
Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, 4,494,823, Cl. 350-96.220.

Oosuga, Minoru; and Ohyama, Yoshishige, to Hitachi, Ltd. Air-flow meter for internal combustion engine. 4,494,405, Cl. 73-118.000.

Opprecht, Jurg: *See*—
Opprecht, Paul; and Opprecht, Jurg, 4,495,397, Cl. 219-93.000.

Opprecht, Paul; and Opprecht, Jurg, to Opprecht, Paul. Projection for resistance welding of soft metals. 4,495,397, Cl. 219-93.000.

Opti-Copy, Inc.: *See*—
Wally, Joseph H., Jr., 4,494,867, Cl. 355-73.000.

Orban Associates, Inc.: *See*—
Orban, Robert A., 4,495,643, Cl. 381-94.000.

Orban, Robert A., to Orban Associates, Inc. Audio peak limiter using Hilbert transforms. 4,495,643, Cl. 381-94.000.

Orcutt, John W.: *See*—
Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., 4,495,376, Cl. 174-52.0FP.

Orito, Yoshio: *See*—
Niwa, Shuichi; Imamura, Juichi; Mizukami, Fujio; Shimizu, Kazuo; and Orito, Yoshio, 4,495,373, Cl. 585-269.000.

Orlando, John V.: *See*—
Cameron, Gordon M.; and Orlando, John V., 4,495,161, Cl. 423-167.000.

Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., to Scientific Pharmaceuticals, Inc. Nail coating. 4,495,172, Cl. 424-61.000.

Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Des-serine^2-glycine^8 calcitonin. 4,495,097, Cl. 260-112.50T.

Ormanns, Siegfried; and Neumann, Helmut, to Ruhrkohle Aktiengesellschaft. Staff-location and signalling system for use in mines. 4,495,495, Cl. 340-825.450.

Orr, William L.: *See*—
Camden, Thomas M., Jr.; and Orr, William L., 4,495,136, Cl. 376-172.000.

Osterhoff, Heinz: *See*—
Rigler, Josef-Karl; Leithauser, Horst; and Osterhoff, Heinz, 4,495,224, Cl. 427-222.000.

Otani, Junji: *See*—
Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, 4,494,504, Cl. 123-308.000.

Otis Engineering Corporation: *See*—
Schwendemann, Kenneth L., 4,494,609, Cl. 166-336.000.
Williams, Charles R.; Yonker, John H.; and Thurman, Robert L., 4,494,608, Cl. 166-317.000.

Otsubo, Akira, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear reactor. 4,495,137, Cl. 376-171.000.

Otsuka, Nobuyuki: *See*—
Hirai, Seiichi; and Otsuka, Nobuyuki, 4,494,941, Cl. 464-145.000.

Otsuki, Hiroyuki: *See*—
Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, 4,495,149, Cl. 422-65.000.

Otto, Gerhard: *See*—
Bredow, Walter; and Otto, Gerhard, 4,495,398, Cl. 219-121.0LG.

Ouchi, Hidenaga: *See*—
Itagaki, Takaharu; Ouchi, Hidenaga; and Shimura, Akihiro, 4,495,250, Cl. 428-520.000.

Ouchi, Teruo; and Shibuya, Hiromichi, to Kabushiki Kaisha Medos Kenkyusho. Method for manufacturing a flexible tube for an endoscope. 4,495,134, Cl. 264-516.000.

Owen, Darrel M.: *See*—
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.

Owens-Illinois, Inc.: *See*—
Perry, Jack I., 4,494,973, Cl. 65-260.000.

Oy Fiskars AB: *See*—
Carter, Larry D., 4,494,340, Cl. 51-214.000.

Oyama, Terrell A., to Apple Computer, Inc. Heat dissipating lead connector for semiconductor packages. 4,494,814, Cl. 339-112.00R.

Ozaki, Satoru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Tagging gas releasing element. 4,495,141, Cl. 376-251.000.

Ozawa, Takashi, to Fuji Xerox Co., Ltd. Signal processing unit for original reading device. 4,495,523, Cl. 358-293.000.

Ozawa, Toshiaki: *See*—
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,494,886, Cl. 400-208.000.

Ozeki, Fumitaka: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Palermo, Anthony, Jr., to Picker Corporation. High voltage connector assembly with internal oil expansion chamber. 4,494,811, Cl. 339-94.00R.

Palitex Project-Company GmbH: *See*—
Inger, Siegfried, 4,494,370, Cl. 57-81.000.

Pall Corporation: *See*—
Adiletta, Joseph G., 4,495,238, Cl. 428-215.000.

Pallos, Ferenc M., to Stauffer Chemical Co. N-Acylsulfonamide herbicidal antidotes. 4,495,365, Cl. 564-91.000.

Pamiello, Gani, to AT&T Bell Laboratories. Electrically isolating two piece mounting washer arrangement. 4,495,515, Cl. 357-81.000.

Panico, C. Richard, to Xenon Corporation. Photomagnetic catalysis process. 4,495,040, Cl. 204-155.000.

Pannocchia, Mario, to Minnesota Mining and Manufacturing Company. Color photographic elements with improved mechanical properties. 4,495,273, Cl. 430-510.000.

Parichkova, Rina G.: *See*—
Futekov, Lyubomir P.; Bekyarov, Georgi L.; and Parichkova, Rina G., 4,494,871, Cl. 356-315.000.

Parisheva, Snejana G. Preparation for treating gum disease. 4,495,171, Cl. 424-58.000.

Park, Joon S.: *See*—
Friends, Gary D.; Melpolder, John B.; Kunzler, Jay F.; and Park, Joon S., 4,495,361, Cl. 556-419.000.

Parks, John R.; Carr, David R.; and Fox, Peter F., to Quest Automation Public Limited Company. Apparatus for signature verification. 4,495,644, Cl. 382-3.000.

Parma Corporation: *See*—
Rogers, Walter C., Jr., 4,494,793, Cl. 297-85.000.

Pasquet, Jean-Pierre: *See*—
Dupuis, Bernard; Pasquet, Jean-Pierre; and Coppens, Christian, 4,495,618, Cl. 370-66.000.

Patterson, Fred R. Pyramidal core structure. 4,495,237, Cl. 428-178.000.

Patterson, Raymond B., III: *See*—
Little, Charles A., III; and Patterson, Raymond B., III, 4,494,551, Cl. 128-696.000.

Pattison, Thomas W.: *See*—
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.

Patukonis, Robert J.; and Banning, Harmon W., to Weinschel Engineering. Voltage doubler circuit. 4,495,556, Cl. 363-59.000.

Paul Wurth S.A.: *See*—
Monteyne, Guido; Calmes, Marc; and Schmeler, Robert, 4,494,971, Cl. 65-19.000.

Pauliukonis, Richard S. Energy conserving air pump. 4,494,912, Cl. 417-347.000.

Paulus, John R.; and Keck, Marvin C., to Pizza Hut, Inc. Pizza oven tool. 4,494,786, Cl. 294-26.000.

Pearson, Robert E. Flip top can cover. 4,494,672, Cl. 220-263.000.

Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, to Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg. Rotating shear for high-speed wire-rolling line. 4,494,427, Cl. 83-306.000.

Peede, Michael R.: *See*—
Blair, Robert E.; and Peede, Michael R., 4,495,329, Cl. 524-774.000.

Peel Truck & Trailer Repair Ltd.: *See*—
DiFranco, Dioniso, 4,494,896, Cl. 410-148.000.

Peil, William: *See*—
Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.

Peirish, Howard W. Flow control device. 4,494,257, Cl. 4-508.000.

Pennwalt Corporation: *See*—
Wu, Edwin S., 4,495,198, Cl. 514-456.000.

Perlin Materials Handling Development Co.: *See*—
Perlin, Morton J.; and Garneau, Richard P., 4,494,271, Cl. 16-21.000.

Perlin, Morton J.; and Garneau, Richard P., to Perlin Materials Handling Development Co. Caster having a three piece encapsulating bearing assembly. 4,494,271, Cl. 16-21.000.

Perlmutter, Michael; and Clampitt, Lawrence L., to Raytheon Company. Electromagnetic wave reflections absorber. 4,494,873, Cl. 356-350.000.

Perry, Jack I., to Owens-Illinois, Inc. Take-out arm for bottle forming machine. 4,494,973, Cl. 65-260.000.

Perstorp AB: *See*—
Ohlsson, Stig L.; and Berthou, Jan-Olov K., 4,494,964, Cl. 51-296.000.

Pervyshin, Alexandr N.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.

Petcen, Donald H., to Coburn Optical Industries, Inc. Wrinkle prevention frame for lens manufacture. 4,494,344, Cl. 38-102.200.

Petcen, Donald H., to Coburn Optical Industries, Inc. Controlled wafer relaxing in making composite lenses. 4,495,015, Cl. 156-80.000.

Peter, Cornelius: *See*—
Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, 4,494,517, Cl. 123-585.000.

Petersen, Carl C.; McKeown, Stephen A.; and Normann, Richard W., to Allied Corporation. Mounting member for electrical contacts. 4,494,818, Cl. 339-192.00R.

Peterson, Bruce M. Back flow valve. 4,494,345, Cl. 137-414.000.

Petit, Leon; and De Lockerente, Serge R., to Societe internationale de Pulicite et d'Agences commerciales, enabrege: "Sipac". Method for preparing a cation exchanger. 4,495,080, Cl. 252-179.000.

Petrelis, Peter G.; and Alexander, John A., to TRW Inc. N by M planar configuration switch for radio frequency applications. 4,495,498, Cl. 340-825.790.

Petrolite Corporation: *See—*
Hausler, Rudolf H.; and Thompson, Neil E. S., 4,495,336, Cl. 252-8.55E.
Quinlan, Patrick M., 4,494,977, Cl. 71-67.000.

Peyre, Henri: *See—*
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.

Pfizer Inc.: *See—*
Rhodes, Peter M.; and Winskill, Norman, 4,495,284, Cl. 435-148.000.
Sarges, Reinhard, 4,495,187, Cl. 514-250.000.

Phelps, Daniel J.: *See—*
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.

Philipp, Herbert R., to General Electric Company. Metal oxide varistor with controllable breakdown voltage and capacitance and method of making. 4,495,482, Cl. 338-21.000.

Phillips, Bobby M., to Eastman Kodak Company. Continuous filament slub yarn. 4,495,244, Cl. 428-399.000.

Phillips Petroleum Company: *See—*
Boston, Ernest B., 4,495,064, Cl. 208-120.000.
Drake, Charles A.; and Turk, Stanley D., 4,495,344, Cl. 528-340.000.
Lindstrom, Merlin R.; Henshaw, Leslie J.; Mark, Harold W.; and Clark, James B., 4,495,200, Cl. 424-286.000.
Rowe, Fred, 4,495,028, Cl. 159-47.100.
Shaw, James E.; and Stapp, Paul R., 4,494,604, Cl. 166-273.000.

Phipps, Cornelius M.; and Phipps, Cornelius M., Jr., to Plastic Specialties, Inc. Interchangeable knitting needle system. 4,494,387, Cl. 66-117.000.

Phipps, Cornelius M., Jr.: *See—*
Phipps, Cornelius M.; and Phipps, Cornelius M., Jr., 4,494,387, Cl. 66-117.000.

Picard, Claude, to La Calhene. Safety device for a locking and opening system. 4,494,586, Cl. 141-384.000.

Piccione, James M. User programmable postal rate calculator. 4,495,581, Cl. 364-466.000.

Picker Corporation: *See—*
Palermo, Anthony, Jr., 4,494,811, Cl. 339-94.00R.

Pierson, Henri G. W. Horizontal vacuum belt filter. 4,495,070, Cl. 210-139.000.

Pigot, Gilles: *See—*
Feurer, Bernard; and Pigot, Gilles, 4,495,117, Cl. 264-1.400.

Pilkington Brothers P.L.C.: *See—*
Marsh, Brian; Rigby, Malcolm J.; and Ward, Peter, 4,494,972, Cl. 65-114.000.

Pink, Frederick C., to Component Marking Systems, Inc. Conveyor belt apparatus. 4,494,456, Cl. 101-35.000.

Pinnow, Douglas A.: *See—*
Abrams, Richard L., Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.

Pioneer Electronic Corporation: *See—*
Numata, Tatsuo, 4,495,469, Cl. 330-2.000.

Piorr, Robert: *See—*
Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, 4,495,092, Cl. 252-559.000.

Piot, Michel: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,495,176, Cl. 424-128.000.

Pitt, John M.; Handy, Richard L.; and Lamb, Robert O., to Iowa State University Research Foundation, Inc. Support system for a railroad track. 4,494,694, Cl. 238-2.000.

Pittaway, Alan K., to Wilkinson Sword Limited. Knife sharpeners. 4,494,339, Cl. 51-204.000.

Pittsburgh & Conneaut Dock Company, The: *See—*
Kane, John J., 4,494,462, Cl. 104-1.00R.

Pizza Hut, Inc.: *See—*
Gunther, Arthur G.; Willsie, Douglas H.; and Hawkins, Leo D., 4,494,654, Cl. 206-562.000.
Paulus, John R.; and Keck, Marvin C., 4,494,786, Cl. 294-26.000.

Place, Donald E., to Therm-O-Disc, Incorporated. Pressure switch. 4,495,389, Cl. 200-83.00P.

Plante, Arcade J.; and Wetzel, Richard F., to Bethlehem Steel Corporation. Automatic nondestructive roll defect inspection system. 4,495,587, Cl. 364-507.000.

Plaschkes, Arnon: *See—*
Bukkems, Franciscus H. J.; Plaschkes, Arnon; Buurman, Cornelis; and Broere, Anton M. P., 4,494,413, Cl. 73-863.430.

Plastic Specialties, Inc.: *See—*
Phipps, Cornelius M.; and Phipps, Cornelius M., Jr., 4,494,387, Cl. 66-117.000.

Plessey Overseas Limited: *See—*
Thompson, Norman C.; and Poole, Steven J., 4,495,630, Cl. 377-110.000.

Poate, John M.: *See—*
Draper, Clifton W.; and Poate, John M., 4,495,255, Cl. 428-669.000.

Poe, L. Richard, to Hartwell Corporation. Flush type rotary drive for latches. 4,494,783, Cl. 292-155.000.

Poisson, Pierre: *See—*
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,495,111, Cl. 260-932.000.

Polaroid Corporation: *See—*
Lewis, John R.; McCurdy, Andrew; and Gaudet, Arthur D., 4,494,821, Cl. 350-6.500.

Polezhaev, Lev V.: *See—*
Bondar, Ljudmila S.; Okunev, Rostan A.; Polezhaev, Lev V.; Kolchin, Sergei P.; Cherkasova, Ljudmila V.; and Nikolaeva, Lilia F., 4,495,201, Cl. 514-560.000.

Pollok, Hans-Jurgen, to Siemens Aktiengesellschaft. Self-pumping thrust bearing for electric machines. 4,494,882, Cl. 384-307.000.

Pont-A-Mousson S.A.: *See—*
Hauer, Jean-Claude; and Oger, Jacques, 4,494,891, Cl. 404-4.000.

Poole, Steven J.: *See—*
Thompson, Norman C.; and Poole, Steven J., 4,495,630, Cl. 377-110.000.

Popp, Walter R.: *See—*
Friedman, Herman H.; and Popp, Walter R., 4,495,208, Cl. 426-335.000.

Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., to Standard Oil Company (Indiana). Crystalline copolyamides from terephthalic acid and hexamethylenediamine and trimethylhexamethylenediamine. 4,495,328, Cl. 524-606.000.

Porko, Gunnar O.: *See—*
Badicel, Evelyn; and Porko, Gunnar O., 4,494,903, Cl. 414-376.000.

Porter, Carl W. Auxilliary fishing sinker. 4,494,334, Cl. 43-43.120.

Porter-Walker, Inc.: *See—*
Brown, Richard A.; and Trew, John D., 4,494,698, Cl. 239-489.000.

Post, Helmut, to Schmolz & Bickenbach. Roll. 4,494,284, Cl. 29-123.000.

Post, Lothar; and Schneider, Bernhard, to Rheinmetall GmbH. Arrangement for determining the presence of a cartridge in a cartridge chamber of a weapon. 4,494,329, Cl. 42-1.00D.

Postl, Wolfgang, to Siemens Aktiengesellschaft. Method for highlighting of a region on a display screen. 4,495,491, Cl. 340-709.000.

Povinec, Pavol: *See—*
Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, 4,495,420, Cl. 250-367.000.

Povio, Raymond A.; and Rebres, Robert P., to Xerox Corporation. Sheet feeding and separating apparatus employing a multiple piece entrance guide. 4,494,744, Cl. 271-34.000.

Powell, Justin C.; and Levine, Stephen A., to Texaco Inc. Process for preparation of amides of unsaturated cyclic keto acids. 4,495,077, Cl. 252-51.50A.

Powers Manufacturing, Inc.: *See—*
Shay, Timothy W.; and Claypool, Mark P., 4,494,656, Cl. 209-524.000.

Praderio, Joseph J., to Codman & Shurtleff. Container for surgical patties. 4,494,653, Cl. 206-370.000.

Pratt, Donna K.; and Terrell, Jamie B., to Gearhart Industries, Inc. Downhole chemical cutting tool. 4,494,601, Cl. 166-55.000.

Prechtel, Georg: *See—*
Scheuerle, Willy; and Prechtel, Georg, 4,494,624, Cl. 180-308.000.

Press, Irving D., to UMC Industries, Inc. Joint for plastic lined lightweight metal piping. 4,494,776, Cl. 285-55.000.

Press Machinery Corporation: *See—*
Schwartz, Michael A.; and Yamagata, Toshio, 4,494,457, Cl. 101-217.000.

Presto Lock, Inc.: *See—*
Remington, Richard C.; and Bott, Lonnie C., 4,495,540, Cl. 361-172.000.

Price, Lewis C., Jr., to Dennison Manufacturing Company. Typeholding chase. 4,494,458, Cl. 101-391.000.

Priestman Brothers Limited: *See—*
Brocklebank, Norman; and Deighton, Kenneth A., 4,494,906, Cl. 414-719.000.

Prince Corporation: *See—*
Flowerday, Carl, 4,494,789, Cl. 296-97.00H.

Princeton Polymer Laboratories, Inc.: *See—*
Hudgin, Donald E.; and Zawadzki, Thomas, 4,495,311, Cl. 523-126.000.

Procter & Gamble Company, The: *See—*
Arnold, Nancy L., 4,494,482, Cl. 119-1.000.
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., 4,494,481, Cl. 119-1.000.

Proud, Joseph M.; and Lapatovich, Walter P., to GTE Laboratories Incorporated. Plasma switch. 4,495,435, Cl. 313-231.310.

Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., to Olin Corporation. Method and apparatus for forming a thixoforged copper base alloy cartridge casing. 4,494,461, Cl. 102-464.000.

Pullman Berry Company: *See—*
Rymarchyk, Nicholas M., Jr.; and Meinert, Leo L., 4,494,737, Cl. 266-281.000.

Punater, Dinesh G., to Harris Graphics Corporation. Apparatus and method for encoding positions of web press machines. 4,495,583, Cl. 364-471.000.

Punater, Dinesh G.: *See—*
Dessert, Robert A.; Gaspar, Richard A.; Laubach, Richard T.; Punater, Dinesh G.; and Barrera, Ralph E., 4,495,582, Cl. 364-469.000.

Pusch, Gunter; Hoffmann, Alexander; and Aisslinger, Dieter E. Camouflage materials having a wide-band effect and system incorporating same. 4,495,239, Cl. 428-192.000.

Puyane, Ramon; Gonzalez-Oliver, Carlos J. R.; and Harmer, Alan L., to Battelle Memorial Institute. Method for making a gradient doped polysiloxane gel. 4,495,297, Cl. 501-12.000.

Quartino, Miguel A., to Hoyt/Easton Archery Co. Archery bow having bow limb assembly and adjustment. 4,494,521, Cl. 124-24.00R.

Quercy, Alexandre, to Societe Anonyme Des Usines Chausson. Transformable seat. 4,494,792, Cl. 297-63.000.

Quest Automation Public Limited Company: *See—*
Parks, John R.; Carr, David R.; and Fox, Peter F., 4,495,644, Cl. 382-3.000.

Quick, Leonard M.: *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,495,062, Cl. 208-111.000.

Quinlan, Patrick M., to Petrolite Corporation. Quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,494,977, Cl. 71-67.000.

Raap, Teresa A.: *See—*
Brander, Rita W.; and Raap, Teresa A., 4,495,205, Cl. 426-104.000.

Rabenau, Albrecht: *See—*
Bell, Michael; Kreuer, Klaus-Dieter; Rabenau, Albrecht; and Weppner, Werner, 4,495,078, Cl. 252-62.200.

Rache, Horst: *See—*
Lerche, Heinz; Rache, Horst; and Wedde, Reiner, 4,495,413, Cl. 250-252.100.

Radtke, Carl T.; Kaiser, Ewald A.; Biedermann, Siegfried M.; and Chapman, Rick J., to IBG International. Motorized pool cover. 4,494,256, Cl. 4-502.000.

Radtke, Robert P., to Strata Bit Corporation. Drill bit with self cleaning nozzle. 4,494,618, Cl. 175-393.000.

Raeburn, John L. Lowering device and method. 4,494,629, Cl. 188-65.500.

Raidel, John E. Suspension system with U-joint mounted load carrying torque arm. 4,494,771, Cl. 280-711.000.

Rainey, Charles E., Jr., to Graham Magnetics Incorporated. Fastener-free baffle assembly system. 4,494,878, Cl. 366-341.000.

Ralph McKay Limited: *See—*
Young, Hartley F.; Remes, Wally A.; and Collins, John L., 4,494,463, Cl. 104-17.00A.

Ram Automotive Company: *See—*
Wheatley, William M., 4,494,488, Cl. 123-1.00A.

Ramani, Rajan V., to Council of Scientific and Industrial Research. Spinning pot used for twisting and winding synthetic textile yarns. 4,494,369, Cl. 57-76.000.

Ramesohl, Hubert: *See—*
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, 4,494,991, Cl. 106-100.000.

Ransburg Japan, Limited: *See—*
Hiroshima, Koichi; and Tada, Yoshinori, 4,495,086, Cl. 252-314.000.

Rao, N. Vasanth; and Shaulov, Avner, to North American Philips Corporation. Pyroelectric targets and method of manufacture. 4,495,441, Cl. 313-388.000.

Rao, Vemulapalli D. N.; and Wade, Wallace R., to Ford Motor Company. Filtration system for diesel engine exhaust-I. 4,494,375, Cl. 60-296.000.

Rashleigh, Scott C., to United States of America, Navy. Fiber optic sensors operating at DC. 4,495,411, Cl. 250-227.000.

Rasmussen, Torben: *See—*
Kroyer, Karl K. K.; and Rasmussen, Torben, 4,494,278, Cl. 19-304.000.

Rathbun, Robert G.; and Thalheimer, Albert J. Continuous still. 4,495,033, Cl. 202-118.000.

Ratsko, Istvan; Ivony, Jozsef; Karaszi, Gyorgy; Madi, Jeno; and Liptai, Nandor, to Autoipari Kutato Intezet, Intzet 03; and IKARUS Karosszeria es Jarmugyar. Anti-jackknifing device with friction brake for articulated motor vehiclecu4,494,76E,a, Cl. 280-432.000.

Rattin, Luciano; and Vigliermo, Amerigo, to Ing. C. Olivetti & C., S.p.A. Apparatus for scanning an original for copiers having a variable reducing/enlargement ratiocu4,494,866, Cl. 355-57.000.

Raufast, Charles, to BP Chimie Societe Anonyme. Process for the bottom drainage of a fluid-bed polymerization reactorcu4,495,337, Cl. 526-88.000.

Rauma-Repola Oy Loviisan Tehtaat: *See—*
Jaakonmaki, Matti; and Raura, Pentti, 4,494,587, Cl. 144-162.00R.

Raura, Pentti: *See—*
Jaakonmaki, Matti; and Raura, Pentti, 4,494,587, Cl. 144-162.00R.

Ray, Lynn L. Racket stringer and tensionercu4,494,752, Cl. 273-73.00A.

Raycon Corporation: *See—*
McGregor, John R.; Rupert, Gary F.; and Kennedy, Thomas M., 4,495,394, Cl. 219-69.00C.

Raymond, Glendon A., to Carrier Corporation. Method and apparatus for controlling when to initiate an increase in compressor capacitycu4,494,382, Cl. 62-160.000.

Raytheon Company: *See—*
Archer, Donald H.; Gilbert, Michael A.; Loomis, Robert H.; and Maybell, Michael J., 4,495,504, Cl. 343-779.000.
Derby, Palmer P., 4,495,392, Cl. 219-10.55E.
Perlmutter, Michael; and Clampitt, Lawrence L., 4,494,873, Cl. 356-350.000.
Weldon, Thomas G., 4,495,462, Cl. 324-120.000.

RCA Corporation: *See—*
Cartwright, James M., Jr., 4,495,427, Cl. 307-469.000.
Deiss, Michael S., 4,495,654, Cl. 455-151.000.
Faraone, Lorenzo, 4,494,301, Cl. 29-571.000.

Rebres, Robert P.: *See—*
Povio, Raymond A.; and Rebres, Robert P., 4,494,744, Cl. 271-34.000.

Reczek, James A.; and Elwood, James K., to Eastman Kodak Company. Coordination complexes of polyvalent metal ions and cyan dye-releasing compounds comprising a 6-heterocyclazo-3-pyridinolcu4,495,098, Cl. 534-651.000.

Reczek, James A.; and Elwood, James K., to Eastman Kodak Company. Non-diffusible cyan compound capable of releasing a 6-heterocyclylazo-3-pyridinolcu4,495,100, Cl. 534-651.000.

Reed, Robert L.: *See—*
Moote, Truman P.; and Reed, Robert L., 4,495,160, Cl. 423-158.000.

Rees, Richard W.: *See—*
Klaubert, Dieter H.; Bell, Stanley C.; Pattison, Thomas W.; and Rees, Richard W., 4,495,101, Cl. 260-239.30T.

Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., to Velasco Scale Company. Bung alignment apparatuscu4,494,583, Cl. 141-83.000.

Regeants of the University of California, The: *See—*
Loomis, Herschel H., Jr., 4,495,591, Cl. 364-724.000.

Regneth, Lorenz: *See—*
Fegley, Charles R.; and Regneth, Lorenz, 4,495,396, Cl. 219-85.00G.

Reich, Erwin A., to Texaco Development Corporation. Synthesis gas generation apparatuscu4,494,963, Cl. 48-69.000.

Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm. Graphite electrode nipplecu4,495,624, Cl. 373-93.000.

Reinmuth, Klaus: *See—*
Hunold, Klaus; Lipp, Alfred; and Reinmuth, Klaus, 4,495,123, Cl. 264-69.000.

Reiss, Ronald J.: *See—*
Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., 4,494,363, Cl. 53-426.000.

Reliance Electric Company: *See—*
Thompson, Dennis R., 4,494,889, Cl. 403-4.000.

Remes, Wally A.: *See—*
Young, Hartley F.; Remes, Wally A.; and Collins, John L., 4,494,463, Cl. 104-17.00A.

Remington, Richard C.; and Bott, Lonnie C., to Presto Lock, Inc. Electronic lockcu4,495,540, Cl. 361-172.000.

REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,494,774, Cl. 280-806.000.

Research Association of Synethtic Dyestuffs: *See—*
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,494,957, Cl. 8-639.000.

Research Corporation: *See—*
Alicock, Harry R.; Austin, Paul E.; and Neenan, Thomas X., 4,495,174, Cl. 424-78.000.
Jacobs, Alan M.; Kenney, Edward S.; and McInerney, Joseph J., 4,495,636, Cl. 378-87.000.

Resnick, Marlene; and Startevant, Roger C. Solar heatingcu4,494,527, Cl. 126-422.000.

Reuter, Herbert: *See—*
Schmid, Karl H.; Rommerskirchen, Hans J.; Reuter, Herbert; Seiter, Wolfgang; and Piorr, Robert, 4,495,092, Cl. 252-559.000.

Rex, Richard U. Apparatus for the production of a monolithic manhole basecu4,494,724, Cl. 249-148.000.

Reynolds, Charles W. Vehicle suspension systemcu4,494,770, Cl. 280-685.000.

Rheinische Braunkohlenwerke AG: *See—*
Dolkemeyer, Wilfried; Keim, Karl-Heinz; and Meisenburg, Ewald, 4,494,960, Cl. 44-51.000.

Rheinmetall GmbH: *See—*
Koine, Richard, 4,494,440, Cl. 89-33.040.
Post, Lothar; and Schneider, Bernhard, 4,494,329, Cl. 42-1.00D.

Rhoades, James J., to Tapco Products Company, Inc. Portable sheet bending brakecu4,494,397, Cl. 72-320.000.

Rhodes, Peter M.; and Winskill, Norman, to Pfizer Inc. Microbiological process for the preparation of 1-carvonecu4,495,284, Cl. 435-148.000.

Rhone-Poulenc Agrochimie: *See—*
Cordier, Georges, 4,495,368, Cl. 564-412.000.

Ribalta, Jose Miguel B.; Bruseghini, Leonida; Casadio, Silvano; and Iniesta, Jorge P. Dioxolanic amine with pharmacological activity, its method of preparation, the pharmaceutical compositions containing same and their use in human medicinecu4,495,199, Cl. 514-467.000.

Rica, Albert F.; Davis, John C.; and Reiss, Ronald J., to FranRica Mfg. Inc.; and Container Technologies, Inc. Method and apparatus for aseptically filling containerscu4,494,363, Cl. 53-426.000.

Ricard, Jean; and Excoffon, Charles, to Circeram. Modified crucible for the pendant drop method of crystallizationcu4,495,155, Cl. 422-248.000.

Richards, Edward W.; and Chang, Paul T., to Tau-Tron, Inc. Controlled phase off-set digital test systemcu4,495,468, Cl. 328-155.000.

Richardson, David. Integrated oscillator-duplexer-mixercu4,495,499, Cl. 343-5.0DD.

Richert, Anton S.: *See—*
Berry, Larry R.; and Richert, Anton S., 4,494,588, Cl. 144-209.00R.

Richie, Michael: *See—*
Stephansen, Erik; Sharma, Rajeeva; and Richie, Michael, 4,494,316, Cl. 34-68.000.

Rickard, Earl K., to Combustion Engineering, Inc. Steam generator with gas recirculation to the ash hopper region of the furnacecu4,494,468, Cl. 110-234.000.

Rickus, Edmund; and Jager, Karlheinz, to Battelle-Institut e.V. MIS or SIS Solar cellscu4,495,375, Cl. 136-255.000.

Ricky Contact Lens Research Institute Inc.: *See—*
Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, 4,494,954, Cl. 8-507.000.

Ricoh Company, Ltd.: *See—*
Araki, Shigeyuki, 4,495,455, Cl. 318-696.000.
Yamaga, Shigeru; and Furukawa, Masamichi, 4,494,854, Cl. 354-484.000.

Riermann, Fred H. Pontoon attachment for all terrain vehiclecu4,494,937, Cl. 440-11.000.
Rigby, Malcolm J.: *See—*
Marsh, Brian; Rigby, Malcolm J.; and Ward, Peter, 4,494,972, Cl. 65-114.000.
Rigler, Josef-Karl; Leithauser, Horst; and Osterhoff, Heinz, to Chemische Werke Huls A.G. Method for preparing improved molding materials from coated fine particulate expandable styrene polymers and application of the coated productscu4,495,224, Cl. 427-222.000.
Riha, Hans J. Wick holder for a liquid-fuel lampcu4,494,926, Cl. 431-321.000.
Rink, Norbert: *See—*
Muschelknautz, Edgar; and Rink, Norbert, 4,494,970, Cl. 65-9.000.
Ritsko, Joseph E.; and Acla, Howard L., to GTE Products Corporation. Process for the recovery of tantalum valuescu4,495,158, Cl. 423-65.000.
Ritzau, William P.; Casselli, Aveo J.; and Fleischer, Gene S., to Electrolux Corporation. Vacuum cleaner wandcu4,494,270, Cl. 15-377.000.
Rizzo, Joseph P., Sr., to Scott Paper Company. Conveyor systemcu4,494,644, Cl. 198-409.000.
Robert Alan Gray Ltd.: *See—*
Gray, Robert A., 4,494,309, Cl. 30-151.000.
Robert Bosch GmbH: *See—*
Babitzka, Rudolf; Beck, Walter; and Linder, Ernst, 4,494,727, Cl. 251-64.000.
Dobler, Klaus; Schoor, Ulrich; Heinz, Rudolf; Frey, Thomas; and Grunwald, Werner, 4,494,401, Cl. 73-35.000.
Kratt, Alfred; Peter, Cornelius; Ruppmann, Claus; and Schillinger, Rainer, 4,494,517, Cl. 123-585.000.
Steinmann, Helmut, 4,495,476, Cl. 331-111.000.
Roberts, Jon A.; and Hendrickson, Thomas E., to Honeywell Inc. Acoustic microphonecu4,495,385, Cl. 179-111.00R.
Robertson, Carl L. Waterbed mattress covercu4,494,262, Cl. 5-451.000.
Robinson, McDonald: *See—*
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Larson, Ove; and Davidson, Charles, 4,494,417, Cl. 74-469.000.
Robotic Vision Systems, Inc.: *See—*
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Roch, Gerald V., to Hurco Manufacturing Co., Inc. Press brake gauging apparatuscu4,494,312, Cl. 33-170.000.
Roche, William J.: *See—*
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.
Rock, Erich; and Brunner, Josef, to Julius Blum Gesellschaft m.b.H. Pull-out guide assembly for drawerscu4,494,803, Cl. 308-3.800.
Rockwell International Corporation: *See—*
Sciulli, Felice M., 4,495,596, Cl. 364-900.000.
Treise, Jan E., 4,495,473, Cl. 331-10.000.
Rodriguez, Pedro A.; Edwards, James B.; and Habermehl, Fred M., to Procter & Gamble Company, The. Animal litter compositioncu4,494,481, Cl. 119-1.000.
Roger, Loic: *See—*
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Rogers, Ernest E., to Felt Products Mfg. Co. Wind energy conversion systemcu4,495,423, Cl. 290-44.000.
Rogers, Eugene A. Damage prevention void filler for separating loads during transitcu4,494,897, Cl. 410-154.000.
Rogers, Walter C., Jr., to Parma Corporation. Trigger release mechanism for reclining chaircu4,494,793, Cl. 297-85.000.
Rognoni, Antonio. Device for filling a pipe with fluids, for emptying fluids from a pipe and for drying a pipecu4,494,584, Cl. 141-98.000.
Rohm GmbH: *See—*
Liebler, Ralf, 4,495,322, Cl. 524-198.000.
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Rohrbach, Hans-Joerg, to Rohrbach Technologie KG; and Baustofftechnik GmbH & Co. Method and apparatus for producing expanded clay and expanded shalecu4,494,928, Cl. 432-13.000.
Rohrbach Technologie KG: *See—*
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Rollmann, Louis D.: *See—*
Calvert, Robert B.; and Rollmann, Louis D., 4,495,166, Cl. 423-329.000.
Romac Industries, Inc.: *See—*
Burnett, Curtis E., 4,494,780, Cl. 285-177.000.
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Roof, G. Wayne. Resealable closure and container structurecu4,494,674, Cl. 220-306.000.
Roos, Friedrich; and Bahner, Friedrich, to Babcock-BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG. Continuous drier for plywood sheetscu4,494,315, Cl. 34-48.000.
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, to Steelcase Inc. Variable back adjuster for chairscu4,494,795, Cl. 297-355.000.
Roper Corporation: *See—*
Fielder, William V. B., Jr., 4,494,593, Cl. 160-177.000.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Benzofuran sulfamatescu4,494,979, Cl. 71-92.000.
Rosaen, Nils O. Fluid filtering devicecu4,495,068, Cl. 210-91.000.
Rosenbaum, Georges: *See—*
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,495,203, Cl. 514-732.000.
Ross, James W., Jr. Temperature insensitive potentiometric electrode systemcu4,495,050, Cl. 204-408.000.
Ross, Joseph: *See—*
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Ross, William E.: *See—*
Anderson, Robert H.; Ross, William E.; and Maki, Theodore R., 4,495,492, Cl. 340-783.000.
Rossi, Cristiano, to Comau S.p.A. Expanded car body welding assembly systemcu4,494,687, Cl. 228-47.000.
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Tomaiuolo, Frank G.; and Lang, John G., 4,495,465, Cl. 324-232.000.
Roth, John A.; and Roth, Lynette B., to Hughes Aircraft Company. Improved superconductor/semiconductor junction structurescu4,495,510, Cl. 357-5.000.
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Rougerie, Jacques. Floating and nonsubmersible nautical craftcu4,494,472, Cl. 114-66.000.
Rovac Corporation: *See—*
Edwards, Thomas C., 4,494,386, Cl. 62-402.000.
Rowe, Fred, to Phillips Petroleum Company. Process control for flash concentrating solutions containing polyolefinscu4,495,028, Cl. 159-47.100.
Roy, Claude, to L.C.C.-C.I.C.E.-Compagnie Europeenne de Compsants Electroniques. Process and device for manufacturing mother capacitors by helical windingcu4,494,704, Cl. 242-56.100.
Roy, Paul J.: *See—*
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Rudolf, Buchegger: *See—*
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Fischer, David L.; and Waterstreet, William E., 4,494,741, Cl. 270-39.000.
Rudt, Robert J., to Albany International Corp. Dryer felt fabric and dryer beltcu4,494,319, Cl. 34-116.000.
Ruger, William B.; and Melcher, Roy L., to Sturm, Ruger & Company, Inc. Inactivating selector arrangement for bolt action firearmscu4,494,330, Cl. 42-16.000.
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Ruhrtal Elektrizitatsgesellschaft Hartig GmbH & Co.: *See—*
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Rupert, Gary F.: *See—*
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Ruppmann, Claus: *See—*
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Russell, James T., to Digital Recording Corporation. Recording and playback systemcu4,495,609, Cl. 369-44.000.
Russo, Joseph L.: *See—*
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Rutgers Research & Educational Foundation: *See—*
Seltzer, Edward; and Hamilton, William A., 4,495,214, Cl. 426-557.000.
Rutherford, David B., Jr.: *See—*
Sibley, Henry C.; and Rutherford, David B., Jr., 4,495,578, Cl. 364-426.000.
Rutledge, Seth E. Split bushing and tool kitcu4,494,290, Cl. 29-280.000.
Ruzek, Wolfgang, to Sulzer Brothers Limited. Heat exchanger for a process gascu4,494,484, Cl. 122-34.000.
Ryan, William P.; Mason, Richard A.; Maida, Vincent A.; and Donovan, Timothy F., to Mite Corporation. Combined metal and plastic standoffcu4,495,380, Cl. 174-138.00D.
Ryba, John M.: *See—*
Johnson, Charles L.; and Ryba, John M., 4,495,377, Cl. 174-68.500.
Rymarchyk, Nicholas M., Jr.; and Meinert, Leo L., to Pullman Berry Company. Lance for repairing the lining of steelmaking vesselscu4,494,737, Cl. 266-281.000.
Rzewinski, Leonard, to Cooper LaserSonics, Inc. Dental cleaning apparatus and methodcu4,494,932, Cl. 433-88.000.
R2 Corporation: *See—*
Heath, Roger L., 4,494,552, Cl. 128-696.000.
S.N.E.C.M.A.: *See—*
Forestier, Alexandre, 4,494,909, Cl. 416-190.000.
Saab-Scania Aktiebolag: *See—*
Stahl, Hans V., 4,495,457, Cl. 364-424.100.
Sabema Material AB: *See—*
Thim, Stig, 4,495,127, Cl. 264-157.000.
Sachse, Burkhard: *See—*
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Sackis, John J.; and Anderson, Paul H., to W. R. Meadows, Inc. Water based concrete curecu4,495,319, Cl. 524-96.000.
Saegusa, Kunio: *See*—
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Saenz, Jesus A.: *See*—
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Safai, Sohrab, to International Business Machines Corporation. Contact extraction toolcu4,494,305, Cl. 29-764.000.
Safeway Stores, Incorporated: *See*—
Meyer, Jerome K., 4,494,582, Cl. 141-9.000.
Safilo, S.p.A.: *See*—
Tabacchi, Vittorio, 4,494,834, Cl. 351-153.000.
Saida, Takashi: *See*—
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Saito, Ryosuke, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Fender and life ladder in onecu4,494,474, Cl. 114-219.000.
Sakai, Mitsugu: *See*—
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Sakakibara, Shinsuke: *See*—
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.
Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Electromagnetic clutch control system for automobilescu4,494,641, Cl. 192-0.076.
Sakakiyama, Ryuzo: *See*—
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Sakamaki, Hisashi: *See*—
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Sakamoto, Kazuo: *See*—
Hata, Hiroyoshi; Honda, Seiichirou; Hosokawa, Seiya; Kanki, Kazuhiko; Matsumiya, Toshiharu; and Sakamoto, Kazuo, 4,495,312, Cl. 523-105.000.
Sakamoto, Masaharu: *See*—
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Sakao, Nobuo: *See*—
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Sakurai, Hiroshi: *See*—
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Salmela, Jouko J.; Hietanen, Jukka; and Syrjanen, Timo. Apparatus for spreading a fluid onto a moving web of materialcu4,494,480, Cl. 118-411.000.
Sanami, Yoshitomo: *See*—
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Sandoz Ltd.: *See*—
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Sankyo Company Limited: *See*—
Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, 4,495,188, Cl. 514-260.000.
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Sano, Shiro, to Agency of Industrial Science and Technology, Ministry of International Trade and Industry. Method for manufacture of low thermal expansion cordierite ceramicscu4,495,300, Cl. 501-102.000.
Sanoian, Corigan. Infrared test for wooden utility poles for structural soundnesscu4,495,518, Cl. 358-113.000.
Sanyo Electric Co., Ltd.: *See*—
Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, 4,494,390, Cl. 68-23.700.
Tokizaki, Hisashi; and Sato, Hironobu, 4,495,450, Cl. 318-138.000.
Sarges, Reinhard, to Pfizer Inc. Method of using [1,2,4]triazolo[4,3-a]quinoxaline-4-amine derivatives as antidepressant and antifatigue agentscu4,495,187, Cl. 514-250.000.
Sarnes, Reiner; and Heinrich, Emil. Process and apparatus for removing combustible lubricants from sinterable workpiecescu4,495,148, Cl. 419-57.000.
Sartorius GmbH: *See*—
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Sasaki, Ken; Matsuyama, Shigeru; Koyama, Masaharu; and Ichihara, Kazuyoshi, to Hitachi, Ltd. Fill port seal with first and second photosensitizerscu4,494,825, Cl. 350-343.000.
Sasaki, Ssamu: *See*—
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Sasamura, Kohhei; and Moriyama, Masaru, to Victor Company of Japan, Ltd. Magnetic reproducing system for a digital signalcu4,495,528, Cl. 360-40.000.
Sasamura, Kouhei, to Victor Company of Japan, Ltd. Equalizer circuit for signal waveform reproduced by apparatus for magnetic digital data recording and playbackcu4,495,531, Cl. 360-65.000.
Sasser, Bill H.; Walker, Scott H.; and Immell, Raymond G., to Motorola, Inc. Image spatial filtercu4,495,506, Cl. 343-909.000.
Sato, Hironobu: *See*—
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Sato Koki Company Ltd.: *See*—
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Sato, Makoto: *See*—
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Sato, Shinobu: *See*—
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Sato, Yasunobu; Fukumi, Hiroshi; Koike, Hiroyuki; and Kitahara, Nobuaki, to Sankyo Company Limited. Acylaminoquinazoline derivatives and a pharmaceutical composition containing themcu4,495,188, Cl. 514-260.000.
Sato, Yasuo. Brake booster operated also by solenoidcu4,494,377, Cl. 60-545.000.
Saurer Diederichs Societe Anonyme: *See*—
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Schafer, Paul; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Process for pad dyeing cellulosic textile materialscu4,494,956, Cl. 8-543.000.
Scharfenberg, Paul M.; and Findley, Kenneth N., Jr., to Findley Adhesives, Inc. Method of manufacturing dual arch corrugated paperboard productcu4,495,011, Cl. 156-78.000.
Schauer, Friedrich, to Kabelmetal Electro GmbH. Connecting a cable to a P.C. boardcu4,494,308, Cl. 29-858.000.
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Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., to GTE Products Corporation. Arc-extinguishing ampul and fluorescent lamp having such ampul mounted on each electrode structurecu4,495,440, Cl. 313-492.000.
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Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,494,658, Cl. 211-49.00R.
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, to Upjohn Company, The. 6-Aryluracilscu4,495,349, Cl. 544-97.000.
Slaats, Mathew A.: *See—*
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., 4,494,721, Cl. 248-406.200.
Slater Gabriel, Nancy J.: *See—*
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.

Slaughter Knife Co., Inc.: *See*—
Slaughter, Richard L., 4,494,310, Cl. 30-155.000.
Slaughter, Richard L., to Slaughter Knife Co., Inc. Belt buckle knifecu4,494,310, Cl. 30-155.000.
Slezak, Adolf: *See*—
Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, 4,494,578, Cl. 139-188.00A.
Sloan Valve Company: *See*—
Billeter, Henry R., 4,494,631, Cl. 188-153.00R.
Slocum, Chester D.; and Batty, John R., Jr., to Cordis Corporation. Implant telemetry systemcu4,494,545, Cl. 128-419.00P.
Slow, Dennis: *See*—
Grainge, Richard W.; and Slow, Dennis, 4,494,830, Cl. 350-486.000.
Smejda, Richard K. Continuous system for treating fabricscu4,494,389, Cl. 68-5.00C.
Smiley, James B.: *See*—
Hoang, Tan; and Smiley, James B., 4,494,899, Cl. 414-22.000.
Smillie, John G., to Aurora Industries, Inc. Apparatus and method for manufacturing cured resin-coated particles for use as a proppantcu4,494,318, Cl. 34-112.000.
Smith, B. Thomas: *See*—
Andrus, Paul G.; Smith, B. Thomas; and Dolash, Thomas M., 4,494,865, Cl. 355-32.000.
Smith, Donald L.; and Jones, David B., to Fairchild Camera and Instrument Corporation. Telephone regulator circuitrycu4,495,382, Cl. 179-81.00R.
Smith, Edgar C.; and Campbell, James B., to Three Dimensional Photography Corp., The. Apparatus for stereoscopic photographycu4,494,864, Cl. 355-22.000.
Smith, Frank T. J.: *See*—
Lawrence, David J.; Abbas, Daniel C.; Phelps, Daniel J.; and Smith, Frank T. J., 4,495,514, Cl. 357-67.000.
Smith, Herman W.: *See*—
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,495,349, Cl. 544-97.000.
Smith, James L. Surface deformation image devicecu4,494,826, Cl. 350-360.000.
Smith, Jari K., to Dow Corning Corporation. Method for preparing silicone-treated starchcu4,495,226, Cl. 427-326.000.
Smith, John R. E., to Dresser Industries, Inc. Method and apparatus for combined cement bond and acoustic well loggingcu4,495,606, Cl. 367-86.000.
Smith, Paul. Anti-arch vehicle suspensioncu4,494,772, Cl. 280-712.000.
Smith, Paul F.: *See*—
Burke, Timothy M.; Smith, Paul F.; Noble, Scott W.; and Schorman, Eric R., 4,495,647, Cl. 455-38.000.
Smith, Peter H., to General Electric Company. Touch control arrangement for data entrycu4,495,485, Cl. 340-365.00C.
Smith, Reginald W.: *See*—
Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., 4,495,376, Cl. 174-52.0FP.
Smith, Robert J.: *See*—
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,495,349, Cl. 544-97.000.
Smith, Robert S. Exerciser for runnerscu4,494,750, Cl. 272-93.000.
Smith, Roland, Jr. Photoflash detectorcu4,494,852, Cl. 354-467.000.
Snam S.p.A.: *See*—
Migliavacca, Enrico, 4,494,893, Cl. 405-172.000.
Snyder, Larry L., to Harrison Western Corporation. Shaft boring machinecu4,494,617, Cl. 175-86.000.
Snyder, Larry L., to Harrison Western Corporation. Tunnel boring machinecu4,494,799, Cl. 299-31.000.
So, Ying-Hung, to Dow Chemical Company, The. Electrochemical chlorination processcu4,495,036, Cl. 204-59.00R.
Societe A.C.B.: *See*—
Berthollet, Pierre, 4,494,325, Cl. 37-2.00R.
Societe Anonyme D.B.A.: *See*—
Guidicelli, Charles, 4,494,719, Cl. 248-27.100.
Societe Anonyme des Etablissements Jouvenel et Cordier: *See*—
Berte, Francois, 4,494,573, Cl. 137-625.500.
Societe Anonyme Des Usines Chausson: *See*—
Quercy, Alexandre, 4,494,792, Cl. 297-63.000.
Societe Anonyme dite: Compagnie Generale d'Electricite: *See*—
Le Mehaute , Alain; and Belin, Claude, 4,495,258, Cl. 429-103.000.
Societe Anonyme dite: L'OREAL: *See*—
Grollier, Jean-Francois; Rosenbaum, Georges; Allec, Josiane; and Shroot, Braham, 4,495,203, Cl. 514-732.000.
Societe D'Assistance Technique Pour Produits Nestle S.A.: *See*—
Green, David; and Blanc, Maurice, 4,495,210, Cl. 426-422.000.
Societe d'Electronique Industrielle d'Elbeuf-Elindel: *See*—
Froeliger, Denis, 4,495,651, Cl. 455-158.000.
Societe internationale de Pulicite et d'Agences commerciales, enabrege: "Sipac": *See*—
Petit, Leon; and De Lockerente, Serge R., 4,495,080, Cl. 252-179.000.
Societe Nationale de L'Amiante: *See*—
Lalancette, Jean-Marc; Cossette, Marcel; and Delvaux, Pierre, 4,495,223, Cl. 427-215.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Capdeboscq, Andre; and Ferry, Jean-Claude, 4,494,602, Cl. 166-65.00R.
Societe Scome-France: *See*—
Baranoff-Rossine, Dimitri, 4,495,526, Cl. 360-15.000.
Soerensen, Gunnar; and Svendsen, Leo G., to A/S Neselco. Powder for use in dry sensitization for electroless platingcu4,495,216, Cl. 427-25.000.
Sofranko, John A.: *See*—
Jones, C. A.; and Sofranko, John A., 4,495,374, Cl. 585-500.000.
Solar Decisions, Inc.: *See*—
Wurst, William C.; and Fyfe, Donald W., 4,494,526, Cl. 126-419.000.
Soloman, Leonard. Security attachment for electrical plugcu4,494,809, Cl. 339-75.00P.
Solow, Joseph E., to Wolo Manufacturing Corporation. Automobile security device for steering column ignition lockscu4,494,391, Cl. 70-428.000.
Solyntjes, Alan J.: *See*—
Nepper, Robert F.; and Solyntjes, Alan J., 4,494,860, Cl. 355-13.000.
Somers, Petrus A. A. M.: *See*—
Van Bochove, Gijsbertus F. J.; and Somers, Petrus A. A. M., 4,494,410, Cl. 73-644.000.
Sommer Co.: *See*—
Sommer, Gordon M., 4,494,635, Cl. 192-12.00C.
Sommer, Gordon M., to Sommer Co. Inching drive for clutch/brake unitcu4,494,635, Cl. 192-12.00C.
Sonder, Richard: *See*—
Miller, Robert E.; Russo, Joseph L.; Sonder, Richard; and Soni, Abraham H., 4,494,259, Cl. 5-66.000.
Sone, Kohki: *See*—
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Sone, Masazumi: *See*—
Endo, Hiroshi; Sone, Masazumi; Imai, Iwao; and Kasuya, Hideo, 4,495,421, Cl. 250-551.000.
Song, Ho K. Adjustable handheld round sandwich holdercu4,494,785, Cl. 294-1.00R.
Soni, Abraham H.: *See*—
Miller, Robert E.; Russo, Joseph L.; Sonder, Richard; and Soni, Abraham H., 4,494,259, Cl. 5-66.000.
Sonneville International Corporation: *See*—
Sonneville, Roger P., 4,494,695, Cl. 238-265.000.
Sonneville, Roger P., to Sonneville International Corporation. Device for affixing a rail to a concrete supportcu4,494,695, Cl. 238-265.000.
Sony Corporation: *See*—
Hashimoto, Shunichi; and Ohno, Katsutoshi, 4,495,085, Cl. 252-301.40F.
Kimura, Shuichi; and Katsuyama, Akira, 4,495,608, Cl. 369-33.000.
Kume, Hisao; and Sanma, Takahide, 4,495,437, Cl. 313-403.000.
Matsuura, Tamiaki; Aiba, Takeshi; Fukushima, Takashi; Nishimura, Masanori; Ohtsuki, Hiroshi; Yabuki, Fujio; and Kusakabe, Tomio, 4,494,298, Cl. 29-563.000.
Sorin Biomedica S.p.A.: *See*—
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.
Souma, Keinosuke: *See*—
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
Souza, Raymond L., to Corning Glass Works. Replaceable junctions for reference electrodescu4,495,053, Cl. 204-435.000.
Sowell, Lyles H., to Du Pont de Nemours, E. I., and Company. Filter elementcu4,494,921, Cl. 425-198.000.
Soyez, Christian: *See*—
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Soyez FR. S.A.: *See*—
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Soyez, Gerard: *See*—
Barathon, Jean-Claude; Moiny, Fernand; Soyez, Christian; and Soyez, Gerard, 4,494,361, Cl. 53-553.000.
Spademan, Richard G. Dynamic internal fitting system with a movable foot bed for a sport shoecu4,494,324, Cl. 36-119.000.
Spargo, John D., to United States of America, Navy. Pressure balanced floating sealcu4,494,760, Cl. 277-30.000.
Sparks, Conrad. Taco Boardcu4,494,454, Cl. 99-426.000.
Spees, Arthur T., to Visu-Flex Company. Compressor for microfiche cards and the likecu4,494,659, Cl. 211-51.000.
Sperber, Franz: *See*—
Hahn, Michael; and Sperber, Franz, 4,494,910, Cl. 416-226.000.
Sperry Corporation: *See*—
Teyssier, Emil G., Jr., 4,494,948, Cl. 493-11.000.
Spevak, Frank: *See*—
O'Brien, James W.; and Spevak, Frank, 4,495,252, Cl. 428-555.000.
Spiliadis, Apostol: *See*—
Cioca, Gheorghe; Siegler, Marcel; and Spiliadis, Apostol, 4,494,994, Cl. 106-308.00P.
Spils, Richard W. Valve having a movable interface isolating an actuating mechanismcu4,494,731, Cl. 251-355.000.
Spinal Dynamics, Inc.: *See*—
Morrow, Winston G., 4,494,261, Cl. 5-436.000.
Spisarenko, Dmitry U.: *See*—
Medovar, Boris I.; Andreev, Vladimir P.; Kozik, Vladimir V.; Shevchenko, Nikolai T.; Spisarenko, Dmitry U.; Malevanny, Vladimir P.; Karpov, Vladimir F.; Chernykh, Viktor V.; Chepurnoi, Anatoly D.; Matsegora, Evgeny A.; and Shuruev, Lev A., 4,495,395, Cl. 219-73.100.
Sportelli, Frank A. Printing screen and method of making samecu4,495,517, Cl. 358-75.000.

SRI International: *See—*
Vickers, Roger S., 4,495,500, Cl. 343-5.0CM.
Stadler, Eberhard: *See—*
Knothe, Erich; Melcher, Franz-Josef; Stadler, Eberhard; and Exner, Rainer, 4,494,620, Cl. 177-25.000.
Stahl, Hans V., to Saab-Scania Aktiebolag. Method of preventing erroneous gear selection in a vehicle transmissioncu4,495,457, Cl. 364-424.100.
Stamberger, Paul, to Union Carbide Corporation. Epoxy-modified polyols and polymer-polyols useful in the preparation of improved plastics, including polyurethane foams, elastomers and the likecu4,495,341, Cl. 528-110.000.
Standard-Knapp, Inc.: *See—*
Johnson, Lloyd D.; and Lewis, Jack H., 4,494,355, Cl. 53-69.000.
Standard Oil Company, The: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,495,109, Cl. 260-465.300.
Moote, Truman P.; and Reed, Robert L., 4,495,160, Cl. 423-158.000.
Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,495,062, Cl. 208-111.000.
Poppe, Wassily; Chen, Yu-Tsai; and Autry, Larry W., 4,495,328, Cl. 524-606.000.
Venardos, Dean G.; and Grieves, Colin G., 4,495,056, Cl. 208-11.00R.
Standley, Paul M.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,494,947, Cl. 474-251.000.
Stanford Junior University: *See—*
Shaw, Herbert J.; Newton, Steven A.; Bowers, John E.; and Jackson, Kenneth P., 4,495,656, Cl. 455-608.000.
Staplin, Theodore R., Jr.; Bradley, John J.; King, Richard L.; Miller, Robert C.; Miu, Ming T.; and Shen, Jian-Kuo, to Honeywell Information Systems Inc. Data processing system having synchronous bus wait/retry cyclecu4,495,571, Cl. 364-200.000.
Stapp, Paul R.: *See—*
Shaw, James E.; and Stapp, Paul R., 4,494,604, Cl. 166-273.000.
Startevant, Roger C.: *See—*
Resnick, Marlene; and Startevant, Roger C., 4,494,527, Cl. 126-422.000.
State Die & Engineering, Inc.: *See—*
Valentine, Al L., 4,494,739, Cl. 269-32.000.
Statt der Nederlanden (Stattsbedrijf der Posterijen, Telegrafie en Telefonie): *See—*
Wilcke, Robert, 4,495,615, Cl. 370-58.000.
Stauffer Chemical Co.: *See—*
Pallos, Ferenc M., 4,495,365, Cl. 564-91.000.
Ste Look: *See—*
Beyl, Jean J. A.; Buzon, Philippe; Campillo, Christian; Cursillat, Jackie; Le Faou, Daniel; and Peyre, Henri, 4,494,769, Cl. 280-630.000.
Campillo, Christian; and Michaud, Jean-Pierre, 4,494,767, Cl. 280-612.000.
Steck, Werner; Kovacs, Jenoe; Mueller, Norbert; and Jakusch, Helmut, to BASF Aktiengesellschaft. Acicular ferromagnetic chromium dioxide particlescu4,495,246, Cl. 428-403.000.
Steelcase Inc.: *See—*
Roossien, Charles P.; Chambers, Brian; and Hiemstra, Bruce, 4,494,795, Cl. 297-355.000.
Steele, James R.: *See—*
Mark, John G.; Steele, James R.; and Hansen, Craig C., 4,495,475, Cl. 331-12.000.
Steele, Raymond; Wong, Wai C.; and Xydeas, Costas S., to AT&T Bell Laboratories. Transmitting data on the phase of speechcu4,495,620, Cl. 370-118.000.
Steffens, James J.: *See—*
Andrea, Tariq A.; John, William W.; and Steffens, James J., 4,494,981, Cl. 71-93.000.
Steiman, Nancy. Maternity bathing suitcu4,494,546, Cl. 128-431.000.
Stein, Robert A., to Tech Development Inc. System and apparatus providing a two step starting cycle for diesel engines using a pneumatic startercu4,494,499, Cl. 123-179.00F.
Steinbiss, Eberhard; Herchenbach, Horst; Ramesohl, Hubert; and Wolter, Albrecht, to Klockner-Humboldt-Deutz AG. Method and apparatus for burning fine grained product, particularly raw cement mealcu4,494,991, Cl. 106-100.000.
Steinmann, Helmut, to Robert Bosch GmbH. Sawtooth voltage generatorcu4,495,476, Cl. 331-111.000.
Steinort, Hans: *See—*
Schmidt, Herbert; and Steinort, Hans, 4,494,265, Cl. 8-159.000.
Stening, Goran B.: *See—*
Hagberg, Curt-Erik; Johansson, Karl N.; Kovacs, Zsuzsanna M. I.; and Stening, Goran B., 4,495,190, Cl. 514-262.000.
Stenzel, Otto: *See—*
Reimpell, Uwe; Wamser, Anton; Stenzel, Otto; and Burgmann, Wilhelm, 4,495,624, Cl. 373-93.000.
Stephansen, Erik; Sharma, Rajeeva; and Richie, Michael, to Impact Systems, Inc. Apparatus for drying a moving webcu4,494,316, Cl. 34-68.000.
Stephens, Alan: *See—*
Vilk, Peter; and Stephens, Alan, 4,494,974, Cl. 65-337.000.
Stephens, James B., to Coast Foundry & Manufacturing Company. Float valve system flow proportioning devicecu4,494,562, Cl. 137-436.000.
Stephens, Ronald R.: *See—*
Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.
Stephenson, James E.: *See—*
Cole, Robert; and Stephenson, James E., 4,494,951, Cl. 8-195.000.
Stepunin, Ivan M.: *See—*
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Sterling Drug Inc.: *See—*
Bryant, Robert J., 4,495,353, Cl. 546-178.000.
Stevens, Frederick G., to Hydra Systems International, Inc. Mount for attaching a device to a firearmcu4,494,328, Cl. 42-1.00A.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Dolenc, Anton, 4,494,700, Cl. 239-533.300.
Stickles, Bonnie J. Episiotomy trauma repair teaching aidcu4,494,936, Cl. 434-273.000.
Stoffelsma, Jan U., to Wavin B.V. Method for coloring polyvinylchloridecu4,495,128, Cl. 264-211.000.
Stoka, Roberto; and Haar, Lucas H., to ITT Industries, Inc. Floating-caliper spot-type disc brakecu4,494,630, Cl. 188-71.800.
Storage Technology Corporation: *See—*
Van Pelt, Richard, 4,494,711, Cl. 242-184.000.
Storage Technology Partners: *See—*
Zasio, John J., 4,495,628, Cl. 377-70.000.
Zasio, John J.; and Cooke, Larry, 4,495,629, Cl. 377-70.000.
Stoutjesdijk, Pieter G.: *See—*
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., 4,494,530, Cl. 127-69.000.
Stoverock, Paul H., to Harris Corporation. Bushing for use between a control knob and a housingcu4,495,547, Cl. 361-400.000.
Strange, Patrick E.: *See—*
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., 4,494,721, Cl. 248-406.200.
Strata Bit Corporation: *See—*
Radtke, Robert P., 4,494,618, Cl. 175-393.000.
Straus, Albert E. Swing control hingecu4,494,273, Cl. 16-50.000.
Strauss, Walter C. Leaf spring diffuser with amplitude limitcu4,495,114, Cl. 261-81.000.
Strayer Coin Bag Co. Inc.: *See—*
Bonner, Cletus D., 4,494,592, Cl. 383-5.000.
Streib, Stephen F., to Chevron Research Company. Ultrasensitive apparatus and positioning method for detecting change in fluid flow conditions in relief flowlines associated with a chemical or refinery complexcu4,495,488, Cl. 340-606.000.
Strick, Nathan: *See—*
Neurath, A. Robert; and Strick, Nathan, 4,495,296, Cl. 436-530.000.
Strifler, Paul, to Daimler-Benz AG. Fuel-consumption monitoring system for motor vehicles with manually-shifted transmissionscu4,494,404, Cl. 73-113.000.
Strunk, Richard D.; Kasten, Robert E.; and Monopoli, Richard V., deceased (by Monopoli, Eileen F., executrix), to Deere & Company. Model reference adaptive implement controlcu4,495,577, Cl. 364-424.000.
Stubbs, James A.; and Gumplo, Eugene L. Paper tape rewinding devicecu4,494,708, Cl. 242-67.30R.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,494,330, Cl. 42-16.000.
Sturtz, Georges: *See—*
Guerin, Bernard; Poisson, Pierre; and Sturtz, Georges, 4,495,111, Cl. 260-932.000.
Stutsman, Richard R., to Vertx Corporation. Article dispensing machine with anti-theft structurecu4,494,675, Cl. 221-13.000.
Su, Wen-Kuang. Foldable clock dialcu4,494,880, Cl. 368-232.000.
Sublette, Jerry M.: *See—*
Simi, Victor M.; and Sublette, Jerry M., 4,495,554, Cl. 363-21.000.
Suda, Hisao: *See—*
Niibori, Kenji; and Suda, Hisao, 4,494,707, Cl. 242-67.200.
Suevia Haiges GmbH & Co.: *See—*
Haiges, Frank, 4,494,483, Cl. 119-77.000.
Sugihara, Taizo; and Aoki, Tsuyoshi, to Chisso Corporation. Process for the production of pile-surfaced textile structurescu4,495,133, Cl. 264-504.000.
Sugimori, Masamichi: *See—*
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Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Fluctuating drive systemcu4,495,560, Cl. 364-154.000.
Sugioka, Takami: *See—*
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Sugiura, Masahiro: *See—*
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.
Sukhov, Leonid V.: *See—*
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Sulzer Brothers Limited: *See—*
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Suminoe, Taro; Ito, Tetsuo; Kiyomatsu, Yasuhiro; and Shimizu, Takao, to Japan Synthetic Rubber Co., Ltd.; and Ricky Contact Lens Research Institute Inc. Process for producing colored contact lenscu4,494,954, Cl. 8-507.000.

Sumitomo Chemical Company, Ltd.: *See*—
Abe, Yasuaki; Hayashi, Mikio; Asagi, Kousaku; Morii, Akira; and Fujimura, Kazutoshi, 4,495,017, Cl. 156-181.000.
Horikiri, Shozo; Kadokura, Hidekimi; Harakawa, Masaji; Saegusa, Kunio; and Yamagiwa, Masao, 4,495,121, Cl. 264-56.000.
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, 4,495,103, Cl. 260-351.100.

Sumitomo Electric Industries, Ltd.: *See*—
Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, 4,494,823, Cl. 350-96.220.

Sumitomo Gomu Kogyo Kabushiki Kaisha: *See*—
Saito, Ryosuke, 4,494,474, Cl. 114-219.000.

Sumitomo Heavy Industries, Ltd.: *See*—
Yamaji, Hiromasa; and Kobayashi, Yuji, 4,494,905, Cl. 414-584.000.

Sun Longitude Corporation: *See*—
Hsi-Shan, Chen, 4,494,275, Cl. 16-314.000.

Sun Studs, Inc.: *See*—
Berry, Larry R.; and Richert, Anton S., 4,494,588, Cl. 144-209.00R.

Sundstrand Corporation: *See*—
Bateman, Charles D., 4,495,483, Cl. 340-970.000.

Sunouchi, Akio: *See*—
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Suntory Limited: *See*—
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, 4,494,681, Cl. 222-485.000.

Surace, Filippo; and Garcea, Giampaolo, to Alfa Romeo S.p.A. Lubricating oil seal device for rotating shaft bearingscu4,494,761, Cl. 277-67.000.

Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,495,109, Cl. 260-465.300.

Surjaatmadja, Jim B.: *See*—
Mosier, John E.; Surjaatmadja, Jim B.; and McLawhon, George B., 4,495,639, Cl. 381-51.000.

Susa, Ermanno: *See*—
Mayr, Adolfo; Susa, Ermanno; and Giachetti, Ettore, 4,495,338, Cl. 526-125.000.

Sutor, Peter T., to Dresser Industries, Inc. Insulating refractoriescu4,495,301, Cl. 501-124.000.

Sutton, Tonja R.; and Hughes, David W., to Dow Chemical Company, The. Reaction injection molded polyurethanes, polyureas and polyurea-urethanes employing chiapolycyclic polyisocyanatescu4,495,309, Cl. 521-51.000.

Suzuki, Hitoshi: *See*—
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Suzuki, Kenichi, to Canon Kabushiki Kaisha. X-Ray apparatuscu4,495,634, Cl. 378-173.000.

Suzuki, Kenichi: *See*—
Inoue, Yoichi; Matsumoto, Toshio; Niwa, Hirosuke; Suzuki, Kenichi; and Hoshide, Yasuo, 4,495,356, Cl. 546-268.000.

Suzuki, Ryuji: *See*—
Fujino, Masahisa; Sunouchi, Akio; Suzuki, Ryuji; and Konno, Tatsuo, 4,494,844, Cl. 354-241.000.

Suzuki, Shuichi: *See*—
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.

Suzuki, Yoshiaki, to Nippon Gakki Seizo Kabushiki Kaisha. Vibration system of pickup cartridge of record playercu4,495,611, Cl. 369-170.000.

Suzuki, Yukiji: *See*—
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, 4,495,236, Cl. 428-172.000.

Suzuki, Yutaka: *See*—
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.

Svaty, Vladimir; and Sevcik, Ladislav, to Elitex, koncern textilniho strojirenstvi. Weft inserting device for jet loomscu4,494,577, Cl. 139-20.000.

Svendsen, Leo G.: *See*—
Soerensen, Gunnar; and Svendsen, Leo G., 4,495,216, Cl. 427-25.000.

Svoboda, Edward J., to Midas International Corporation. Tubing expander apparatuscu4,494,398, Cl. 72-393.000.

Swearingen, Judson S. Fluid handling method with improved purificationcu4,495,035, Cl. 203-23.000.

Swiderski, Paul R.: *See*—
Blevins, Theodore J.; and Swiderski, Paul R., 4,494,258, Cl. 5-29.000.

Swihart, Terence J.: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,495,340, Cl. 528-15.000.

Swiss Aluminium Ltd.: *See*—
Hershey, Robert E., 4,494,735, Cl. 266-218.000.

Switzer, Jay A., to Union Oil Company of California. Electrode containing thallium (III) oxidecu4,495,046, Cl. 204-242.000.

Sydansk, Robert D., to Marathon Oil Company. Process for improving vertical conformance in a near well bore environmentcu4,494,606, Cl. 166-295.000.

Synek, Ervin H.; and Volejnicek, David. Table with a mechanism for automatically varying the size of the tabletopcu4,494,466, Cl. 108-85.000.

Syrjanen, Timo: *See*—
Salmela, Jouko J.; Hietanen, Jukka; and Syrjanen, Timo, 4,494,480, Cl. 118-411.000.

System Development Corporation: *See*—
Dickinson, Robert V.; and Galie, Louis M., 4,495,566, Cl. 364-200.000.

Szentmiklosi, Peter: *See*—
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.

Tabacchi, Vittorio, to Safilo, S.p.A. Hinge for the pivoting of an elastically divertible temple piece to an eyeglass framecu4,494,834, Cl. 351-153.000.

Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., to United States of America, Navy. Dual species ion implantation of ternary compounds based on In-Ga-Ascu4,494,995, Cl. 148-1.500.

Tabuse, Katsuyoshi: *See*—
Zenitani, Toshio; and Tabuse, Katsuyoshi, 4,494,539, Cl. 128-303.100.

Tachika, Tetsuji; Sakamaki, Hisashi; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Copying apparatuscu4,494,861, Cl. 355-14.00R.

Tada, Yoshinori: *See*—
Hiroshima, Koichi; and Tada, Yoshinori, 4,495,086, Cl. 252-314.000.

Tagnon, Luc; and Wajs, Georges, to Essilor International Cie General d'Optique. Apparatus for circulating and regenerating a degradable solution such as a saturable absorber for a lasercu4,494,569, Cl. 137-563.000.

Tahara, Hiroshi: *See*—
Kakuhashi, Takeshi; and Tahara, Hiroshi, 4,495,524, Cl. 338-314.000.

Tajima, Yoshio: *See*—
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, 4,495,236, Cl. 428-172.000.

Taka, Hideo: *See*—
Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, 4,494,842, Cl. 354-173.110.

Takada, Juichiro. Seat belt retractor with an automatically memorized tensionless positioncu4,494,709, Cl. 242-107.600.

Takada, Toshiyuki; and Tamba, Shinichi, to Kawasaki Jukogyo Kabushiki Kaisha. Liquid-cooled internal combustion enginecu4,494,491, Cl. 123-41.720.

Takahashi, Hideyuki; and Ishikawa, Shozo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member comprising disazo compoundcu4,495,264, Cl. 430-58.000.

Takahashi, Hiroshi: *See*—
Kobayashi, Takashi; Inagaki, Takeshi; Takahashi, Hiroshi; and Ohisa, Takayuki, 4,494,843, Cl. 354-214.000.

Takahashi, Jiro; Komamura, Tawara; Sawada, Kiyoshi; Sasaki, Ssamu; Goto, Satoshi; and Kinoshita, Akira, to Konishiroku Photo Industry Co., Ltd. Electrophotographic substituted p,p'-bisazo diphenyl acrylonitrile compounds for photoreceptorscu4,495,261, Cl. 430-58.000.

Takahashi, Katsuhiko: *See*—
Sugimoto, Gunji; Arakawa, Hideo; Ishihara, Toshikazu; Sugiura, Masahiro; and Takahashi, Katsuhiko, 4,495,560, Cl. 364-154.000.

Takahashi, Kazuo: *See*—
Ihara, Hiroyuki; Takahashi, Kazuo; Matsubara, Michiro; Kumata, Fumio; and Sanami, Yoshitomo, 4,495,089, Cl. 252-364.000.

Takahashi, Masao: *See*—
Ida, Jinsei; Hagimoto, Yosio; Takahashi, Masao; and Azuma, Saburo, 4,494,282, Cl. 29-33.00P.

Takahashi, Ryousuke: *See*—
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.

Takamura, Masayuki; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Eyeglass-framecu4,494,832, Cl. 351-41.000.

Takamura, Masayuki; and Kurahashi, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Eyeglass-framecu4,494,833, Cl. 351-41.000.

Takano, Toshio; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Electro-magnetic clutch control system for automobilescu4,494,639, Cl. 192-0.052.

Takeda Chemical Industries, Ltd.: *See*—
Imada, Isuke; Okutani, Tetsuya; and Watanabe, Masazumi, 4,495,104, Cl. 260-396.00R.
Nakabayashi, Masamitsu; Miyaji, Masuo; and Kamatani, Yoshio, 4,495,020, Cl. 156-314.000.

Takeda, Kenji: *See*—
Aoki, Takao; Inoue, Takahiro; Goto, Masahiro; and Takeda, Kenji, 4,494,856, Cl. 355-3.00R.

Takeda Riker Co. Ltd.: *See*—
Nakagomi, Koji; Aoki, Tetsuo; and Nakajima, Takayuki, 4,495,621, Cl. 371-6.000.

Takehara, Hideaki: *See*—
Wada, Yoshiyo; and Takehara, Hideaki, 4,495,610, Cl. 369-126.000.

Takei, Toshihiro; Goshima, Takahiro; Hattori, Yoshiyuki; and Matsui, Kazuma, to Nippondenso Co., Ltd. Power transmission device for vehiclescu4,494,943, Cl. 474-28.000.

Takemoto, Yoshinori: *See*—
Muto, Kenji; Takemoto, Yoshinori; Hatta, Takao; Hashimoto, Tamotsu; Yamada, Koji; and Watanabe, Minoru, 4,495,192, Cl. 514-318.000.

Takeuchi, Hidemaro: *See*—
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, 4,494,998, Cl. 148-2.000.

Takeuchi, Masaharu: *See*—
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.

Takeuchi, Ryoichi: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,495,290, Cl. 435-315.000.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.
Takiguchi, Tetsuo, to Kabushiki Kaisha Yanagiya Tekkosho. Producing apparatus for fish meat processed foodcu4,494,356, Cl. 53-122.000.
Takimoto, Hiroyuki: *See*—
Kozuki, Susumu; Maeda, Masaya; and Takimoto, Hiroyuki, 4,495,527, Cl. 360-33.100.
Takimoto, Masaaki; Saida, Takashi; and Murata, Masataka, to Fuji Photo Film Co., Ltd. Photosensitive materials having improved antistatic propertycu4,495,276, Cl. 430-527.000.
Takita, Tomohisa: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.
Talkington, Howard R.: *See*—
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,494,938, Cl. 441-33.000.
Tamaki, Hiroaki; and Nakamura, Joji, to Kabushiki Kaisha Komatsu Seisakusho. Method and apparatus for driving hollow piles into the groundcu4,494,613, Cl. 173-74.000.
Tamba, Shinichi: *See*—
Takada, Toshiyuki; and Tamba, Shinichi, 4,494,491, Cl. 123-41.720.
Tamburro, Peter J., to AT&T Bell Laboratories. Coaxial cable connectorcu4,494,816, Cl. 339-177.00R.
Tamoto, Katsumi: *See*—
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, 4,495,103, Cl. 260-351.100.
Tamura, Hiroshi: *See*—
Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.
Tanaka, Akira: *See*—
Fukuroi, Takeo; Omori, Shigenori; and Tanaka, Akira, 4,494,922, Cl. 425-324.100.
Tanaka, Atsuyuki, to Minolta Camera Kabushiki Kaisha. Computerized information processing system equipped with copying apparatuscu4,494,862, Cl. 355-14.00C.
Tanaka, Masaki, to Shin-Etsu Chemical Co., Ltd. Foamable silicone-containing composition for treatment of fabric materialscu4,495,227, Cl. 427-373.000.
Tanaka, Shigenori: *See*—
Nakahara, Chizuko; Tanaka, Shigenori; Tamura, Hiroshi; and Matsumoto, Akiyoshi, 4,495,294, Cl. 436-502.000.
Tanaka, Toshio; Miyanaka, Motoshi; and Kochiyama, Shigekichi, to Hitachi, Ltd. Flame detector for pulse combustion apparatuscu4,494,924, Cl. 431-78.000.
Tanaka, Yasuo: *See*—
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.
Tanaka, Yoshikazu: *See*—
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000.
Tanczyn, Harry: *See*—
Schumacher, William J.; and Tanczyn, Harry, 4,494,988, Cl. 75-128.00A.
Tanigawa, Ikuo: *See*—
Fujita, Yuko; Kudo, Hisashi; and Tanigawa, Ikuo, 4,495,051, Cl. 204-408.000.
Tanoue, Yoriko: *See*—
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, 4,495,315, Cl. 523-125.000.
Tapco Products Company, Inc.: *See*—
Rhoades, James J., 4,494,397, Cl. 72-320.000.
Taracatac, Corazon A.; Flores, Luis; and Chaudhry, Viren, to Shaklee Corporation. Gel tableting agentcu4,495,177, Cl. 424-147.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Electrostatic reproducing apparatuscu4,495,508, Cl. 346-159.000.
Tate & Lyle Public Limited Company: *See*—
Beyts, Pamela K.; and Latymer, Zdenek, 4,495,170, Cl. 424-48.000.
Tatsuo, Inada: *See*—
Noboru, Nasu; and Tatsuo, Inada, 4,494,740, Cl. 270-31.000.
Tau-Tron, Inc.: *See*—
Richards, Edward W.; and Chang, Paul T., 4,495,468, Cl. 328-155.000.
Taylor, Chandler R., Jr., to A. H. Robins Company, Incorporated. Aryl substituted pyrido[1,4]benzodiazepines for treatment of depressioncu4,495,183, Cl. 514-220.000.
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., to Doulton Industrial Products Limited. Ceramics compactcu4,495,302, Cl. 501-125.000.
Tech Development Inc.: *See*—
Stein, Robert A., 4,494,499, Cl. 123-179.00F.
Tecumseh Products Company: *See*—
Kaufman, Vernon R., 4,494,286, Cl. 29-156.50A.
Teijin Limited: *See*—
Iwata, Kaoru; Hagiwara, Tsuneo; and Matsuzawa, Hiroshi, 4,495,343, Cl. 528-292.000.
Teijin Seiki Co., Ltd.: *See*—
Miyake, Yuzuru; Sugioka, Takami; Murakami, Shoichi; and Ibuki, Hideaki, 4,494,702, Cl. 242-18.00R.
Tektronix: *See*—
Murphy, Desmond L., 4,495,458, Cl. 324-57.00R.
Tektronix, Inc.: *See*—
Andrews, Roland E., 4,495,586, Cl. 364-487.000.
Barrett, Ronald A., 4,495,471, Cl. 330-151.000.
Bristol, Lloyd R., 4,495,470, Cl. 330-9.000.
Wahlquist, Clayton C., 4,495,519, Cl. 358-139.000.
Terahata, Masahiro: *See*—
Aoki, Haruo; and Terahata, Masahiro, 4,494,845, Cl. 354-297.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compoundscu4,495,182, Cl. 514-226.000.
Terashima, Shiro; Tamoto, Katsumi; and Sugimori, Masamichi, to Sumitomo Chemical Company, Ltd. Preparation of optically active 4-demethoxydaunomycinonecu4,495,103, Cl. 260-351.100.
Terrell, Jamie B.: *See*—
Pratt, Donna K.; and Terrell, Jamie B., 4,494,601, Cl. 166-55.000.
Terry, F. Duncan: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,495,599, Cl. 364-900.000.
Tesch, Guenter H. Process for the preparation of fiber-reinforced flat bodies containing a hardenable bindercu4,495,235, Cl. 428-137.000.
Teshima, Kenzo: *See*—
Hatakeyama, Yoshiharu; and Teshima, Kenzo, 4,495,125, Cl. 264-132.000.
Tetra Pak International AB: *See*—
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, 4,495,016, Cl. 156-152.000.
Texaco Development Corporation: *See*—
Reich, Erwin A., 4,494,963, Cl. 48-69.000.
Texaco Inc.: *See*—
Powell, Justin C.; and Levine, Stephen A., 4,495,077, Cl. 252-51.50A.
Walker, Clarence O., 4,494,610, Cl. 166-301.000.
Wiechel, John F.; French, Charles R.; and Hall, Wilbur L., 4,494,605, Cl. 166-288.000.
Texas Industries, Inc.: *See*—
Johnson, Joseph A., 4,495,132, Cl. 264-293.000.
Texas Instruments Incorporated: *See*—
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,495,592, Cl. 364-754.000.
Hightower, Angus W.; Smith, Reginald W.; and Orcutt, John W., 4,495,376, Cl. 174-52.0FP.
Leach, Jerald G., 4,495,426, Cl. 307-453.000.
McDonough, Kevin C., 4,495,563, Cl. 364-200.000.
Textron Inc.; *See*—
Simpson, Anthony Y., 4,494,473, Cl. 114-67.00A.
Teyssier, Emil G., Jr., to Sperry Corporation. Air controlled paper stackercu4,494,948, Cl. 493-11.000.
Thalheimer, Albert J.: *See*—
Rathbun, Robert G.; and Thalheimer, Albert J., 4,495,033, Cl. 202-118.000.
Therm-O-Disc, Incorporated: *See*—
Place, Donald E., 4,495,389, Cl. 200-83.00P.
Thevenin, Michel; and Jullien, Georges, to Novatome. Junction device between the delivery duct of a primary pump and a duct joined to the core support of a fast neutron nuclear reactorcu4,495,138, Cl. 376-203.000.
Thevenon, Henri, to Les Cables de Lyon. Splice for electric cable armorcu4,495,379, Cl. 174-88.00R.
Thim, Stig, to A-Betong AB; and Sabema Material AB. Method of manufacturing concrete sleeper blockscu4,495,127, Cl. 264-157.000.
Thomas A. Schutz Co., Inc.: *See*—
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,494,658, Cl. 211-49.00R.
Thomas, Christian, to La Telemecanique Electrique. Contactor apparatus comprising means for automatically opening power circuits and a local control devicecu4,495,538, Cl. 361-115.000.
Thomas, Francis J. Vehicle lighting systemcu4,495,444, Cl. 315-82.000.
Thomas, William R., to Baxter Travenol Laboratories, Inc. Process for making novel blood clotting enzyme compositionscu4,495,278, Cl. 435-5.000.
Thomasson, William R., to Coles Cranes Limited. Booms for cranes or the likecu4,494,351, Cl. 52-690.000.
Thompson, David L. Motorcycle power transmission and brake assemblycu4,494,622, Cl. 180-227.000.
Thompson, Dennis J., to AT&T Bell Laboratories. Computer memory address matcher and processcu4,495,565, Cl. 364-200.000.
Thompson, Dennis R., to Reliance Electric Company. Shaft bushing and hub assemblycu4,494,889, Cl. 403-4.000.
Thompson, Floyd M., to Crutcher Resources Corporation. Method and apparatus for positioning a welding torch in automatic electric weldingcu4,495,400, Cl. 219-125.120.
Thompson, Ivey G.: *See*—
Bowers, Cecil W.; Thompson, Ivey G.; and Allan, Thomas T., 4,494,403, Cl. 73-40.700.
Thompson, Neil E. S.: *See*—
Hausler, Rudolf H.; and Thompson, Neil E. S., 4,495,336, Cl. 252-8.55E.
Thompson, Norman C.; and Poole, Steven J., to Plessey Overseas Limited. Adjustable ratio dividercu4,495,630, Cl. 377-110.000.
Thomson-CSF: *See*—
Ballegeer, Jean C.; and Nguyen, Duyet H., 4,495,573, Cl. 364-200.000.

Boutrois, Guy, 4,494,691, Cl. 235-470.000.
Charruau, Stephane, 4,495,622, Cl. 371-20.000.
Descamps, Bernard, 4,495,513, Cl. 357-43.000.
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., to U.S. Philips Corporation. Device for the optical scanning of a documentcu4,495,412, Cl. 250-227.000.
Three Dimensional Photography Corp., The: *See*—
Smith, Edgar C.; and Campbell, James B., 4,494,864, Cl. 355-22.000.
Thrush, Roger L., to White Consolidated Industries, Inc. Rotary selector switchcu4,495,387, Cl. 200-6.00B.
Thurlow, Heida L. Cookware with covers having metal handlescu4,494,274, Cl. 16-110.00A.
Thurman, Robert L.: *See*—
Williams, Charles R.; Yonker, John H.; and Thurman, Robert L., 4,494,608, Cl. 166-317.000.
Thyssen-Bornemisza Inc.: *See*—
Neff, Steven W.; and Borsh, Richard J., 4,494,779, Cl. 285-159.000.
Tickle, Barbara L.: *See*—
Taylor, Derek; Howlett, Stephen P.; Farr, Howard J.; and Tickle, Barbara L., 4,495,302, Cl. 501-125.000.
Tillbrook, Anthony A. C. Protective clothingcu4,494,246, Cl. 2-2.10R.
Timbers, Lynda J.: *See*—
Sheppard, Mark T.; and Timbers, Lynda J., 4,494,250, Cl. 2-227.000.
Timoshenko, John A.; and Bergh, Daniel D., to General Electric Company. Dynamic load bearing transmission line support membercu4,495,381, Cl. 174-178.000.
Toa Medical Electronic Co., Ltd.: *See*—
Iwata, Toyotaro; Nakajima, Kunio; and Otsuki, Hiroyuki, 4,495,149, Cl. 422-65.000.
Tobin, Joseph M., deceased: *See*—
Kochka, Edgar L.; Tobin, Joseph M., deceased; and Neve, Arlene F., administratrix, 4,495,140, Cl. 376-207.000.
Toda Kogyo Corp.: *See*—
Okuda, Yosiro; and Harada, Tosiharu, 4,495,164, Cl. 423-266.000.
Toeppen, John S., to Bell & Howell Company. Dual lens image rotation systemcu4,494,840, Cl. 353-101.000.
Toishi, Yoshiyuki, to Yoshida Kogyo K. K. Method for securing bottom end stop to fastener chaincu4,494,292, Cl. 29-408.000.
Tokhunts, Roman D.: *See*—
Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and Levin, Sofia N., administratrix, 4,494,925, Cl. 431-158.000.
Tokizaki, Hisashi; and Sato, Hironobu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Control device for brushless motorcu4,495,450, Cl. 318-138.000.
Tokunaga, Hiroshi: *See*—
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,495,508, Cl. 346-159.000.
Tokura, Kimihide: *See*—
Kurafuzi, Takamasa; and Tokura, Kimihide, 4,495,532, Cl. 360-71.000.
Tokyo Institute of Technology: *See*—
Minami, Kazuo, 4,495,442, Cl. 315-3.000.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Tokizaki, Hisashi; and Sato, Hironobu, 4,495,450, Cl. 318-138.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Eguchi, Kazutoshi, 4,495,575, Cl. 364-200.000.
Hayase, Shuzi; Onishi, Yasunobu; and Suzuki, Shuichi, 4,495,042, Cl. 204-159.140.
Horii, Tetsuo; and Kohno, Takeshi, 4,494,655, Cl. 209-569.000.
Kurafuji, Takamasa, 4,495,534, Cl. 360-74.100.
Kurafuzi, Takamasa; and Tokura, Kimihide, 4,495,532, Cl. 360-71.000.
Nagoh, Chiaki, 4,495,521, Cl. 358-256.000.
Nishikawa, Meisei; Nakamura, Yukio; and Kojima, Tadashi, 4,495,474, Cl. 331-11.000.
Ohhashi, Akinami, 4,495,645, Cl. 382-6.000.
Ohno, Junichi; and Ohta, Takao, 4,494,996, Cl. 148-1.500.
Shimoma, Taketoshi; Fukuda, Kumio; and Shimaoogi, Toshio, 4,495,439, Cl. 313-412.000.
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, 4,494,857, Cl. 355-3.0CH.
Tolley, Andrew T.: *See*—
Tolley, Calvert B.; and Tolley, Andrew T., 4,494,277, Cl. 17-71.000.
Tolley, Calvert B.; and Tolley, Andrew T., to Sea Savory, Inc. Crab holder for processing machinecu4,494,277, Cl. 17-71.000.
Tomaiuolo, Frank G.; and Lang, John G., to Rotesco Inc. Method and apparatus for non-destructive testing of magnetically permeable bodies using a first flux to saturate the body and a second flux opposing the first flux to produce a measurable fluxcu4,495,465, Cl. 324-232.000.
Tominaga, Masahiro; Nakamura, Kenichi; and Mishima, Kunio. Weather strip for automobilescu4,495,234, Cl. 428-122.000.
Tomohiro, Yoshitaka: *See*—
Hagiwara, Michiaki; and Tomohiro, Yoshitaka, 4,495,074, Cl. 210-695.000.
Tomsu, David L.: *See*—
Williams, V. Harold; and Tomsu, David L., 4,494,806, Cl. 312-333.000.
Tonjes, Heinz: *See*—
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.
Tooley, Mark A.: *See*—
Corrie, John D.; and Tooley, Mark A., 4,494,717, Cl. 246-28.00F.
Torii, Nobutoshi: *See*—
Inaba, Hajimu; Sakakibara, Shinsuke; Inagaki, Shigemi; and Torii, Nobutoshi, 4,495,453, Cl. 318-568.000.
Torizuka, Keizi, to Diesel Kiki Co., Ltd. Fuel injection pump for internal combustion engines, free from erosion of the pump housingcu4,494,513, Cl. 123-495.000.
Totoku Electric Co., Ltd.: *See*—
Sakai, Yoshio; and Yamada, Takeshi, 4,495,406, Cl. 219-528.000.
Toyo Jozo Kabushiki Kaisha: *See*—
Ohyama, Kunio; Nakagawa, Nobuaki; and Watanabe, Susumu, 4,495,151, Cl. 422-102.000.
Toyo Shokuhin Kikai Kabushiki Kaisha: *See*—
Yoshida, Toshio, 4,495,584, Cl. 364-479.000.
Toyokura, Nobuo: *See*—
Kato, Takashi; and Toyokura, Nobuo, 4,495,219, Cl. 427-82.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Inui, Masaki; and Yasui, Yasuyoshi, 4,494,419, Cl. 74-477.000.
Ito, Hiroshi, 4,495,576, Cl. 364-424.100.
Itou, Takaaki; Katou, Takashi; and Morino, Toshiharu, 4,495,112, Cl. 261-41.00D.
Kawamura, Setuo, 4,494,559, Cl. 137-116.500.
Kobuki, Shinzo; Kubota, Hazime; and Miyamaru, Tsuneo, 4,494,723, Cl. 248-635.000.
Matsuura, Tsuyoshi, 4,494,289, Cl. 29-227.000.
Nakamura, Norihiko; Baika, Toyokazu; Miki, Toshio; and Kohigashi, Minoru, 4,494,495, Cl. 123-90.150.
Nakamura, Norihiko; and Baika, Toyokazu, 4,494,496, Cl. 123-90.150.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,494,497, Cl. 123-179.00B.
Toyota Tidosha Kabushiki Kaisha: *See*—
Watanabe, Hiroyuki; and Ohashi, Mikio, 4,494,337, Cl. 49-374.000.
Trace Athletic Corporation: *See*—
Kelly, Michael J., 4,494,247, Cl. 2-24.000.
Tracor, Inc.: *See*—
Klein, Elias; and Beach, Douglas J., 4,495,067, Cl. 210-87.000.
Trailigaz, Compagnie Generale de L'Ozone: *See*—
Marets, Maurice, 4,495,043, Cl. 204-176.000.
Treen, Kevin L., to Codex Corporation. Multiprocessor/multimemory control systemcu4,495,567, Cl. 364-200.000.
Treise, Jan E., to Rockwell International Corporation. Digital phase shifting apparatus which compensates for change of frequency of an input signal to be phase shiftedcu4,495,473, Cl. 331-10.000.
Trew, John D.: *See*—
Brown, Richard A.; and Trew, John D., 4,494,698, Cl. 239-489.000.
Tri-Star Enterprises, Inc.: *See*—
Hoang, Tan; and Smiley, James B., 4,494,899, Cl. 414-22.000.
Trigometer, Inc.: *See*—
Hickling, Colin D.; and Barnes, Marvin, 4,495,481, Cl. 337-349.000.
Trinkel, Steven F.; Strange, Patrick E.; and Slaats, Mathew A., to Kimball International, Inc. Seat adjustment mechanism for a chaircu4,494,721, Cl. 248-406.200.
Trottmann, Bruno, to C. Hoegger & Cie. AG. Feeding machine and receiving device for apportioned sausage chainscu4,494,276, Cl. 17-1.00F.
Troyen, Harry D. Apparatus for supplying a flow of liquid to a turbinecu4,494,567, Cl. 137-561.00A.
TRW Inc.: *See*—
Petrelis, Peter G.; and Alexander, John A., 4,495,498, Cl. 340-825.790.
Wolf, Stanley; and Atwood, Warren C., 4,495,220, Cl. 427-82.000.
Tselniker, Efim Y.: *See*—
Sidorov, Viktor V.; Tselniker, Efim Y.; Sidorov, Evgeny P.; Sukhov, Leonid V.; Gorb, Vyacheslav F.; and Bairakovsky, Gennady M., 4,495,401, Cl. 219-136.000.
Tsenta, Nikolai E.: *See*—
Eystratov, Vitaly A.; Elkin, Mikhail Y.; Danilenko, Viktor Y.; Stepunin, Ivan M.; Tsenta, Nikolai E.; Rud, Sergei A.; and Belferman, Leonid M., 4,494,448, Cl. 92-172.000.
Tsubakimoto-Morse Co., Ltd.: *See*—
Wakabayashi, Shozo; and Narita, Kinzo, 4,494,636, Cl. 192-41.00A.
Tsubota, Motohiko; and Moriguchi, Masakazu, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic elementcu4,495,270, Cl. 430-218.000.
Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Reaction force apparatus for a vacuum boostercu4,494,443, Cl. 91-369.00A.
Tsubouchi, Kaoru: *See*—
Furuta, Yohichi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,494,445, Cl. 91-369.00A.
Tsuchiya, Yoshikazu: *See*—
Ohmori, Taiji; Sato, Makoto; and Tsuchiya, Yoshikazu, 4,494,801, Cl. 303-92.000.
Tsuda, Hiroshi: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Tsukada, Koji: *See—*
Kondo, Haruyoshi; Tsukada, Koji; and Takeuchi, Masaharu, 4,494,409, Cl. 73-651.000.
Tsukada, Toshihisa: *See—*
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.
Tsunekawa, Takahiko: *See—*
Morita, Takayuki; Tsunekawa, Takahiko; and Amano, Hisao, 4,494,371, Cl. 57-263.000.
Tsuruoka, Ryozo: *See—*
Nakayama, Tadakazu; Tsuruoka, Ryozo; and Matsumoto, Masaki, 4,495,142, Cl. 376-251.000.
Tsuruoka, Takashi: *See—*
Koyama, Masao; Tsuruoka, Takashi; Ezaki, Norio; Miyauchi, Keinosuke; and Incuye, Shigeharu, 4,495,358, Cl. 548-550.000.
Tsushima, Rikio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,495,173, Cl. 424-70.000.
Tsuzuki, Yoshihiko: *See—*
Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; and Hasegawa, Takashi, 4,494,511, Cl. 123-463.000.
Tunac, Josefino B.; Dobson, William E.; and Graham, Blanche D., to Warner-Lambert Company. Antibiotic complex producing bacterial culturecu4,495,286, Cl. 435-253.000.
Turk, Gunter: *See—*
Nauroth, Peter; Esch, Heinz; and Turk, Gunter, 4,495,167, Cl. 423-339.000.
Turk, Stanley D.: *See—*
Drake, Charles A.; and Turk, Stanley D., 4,495,344, Cl. 528-340.000.
Turner, E. Wayne: *See—*
Hardigg, James S.; and Turner, E. Wayne, 4,495,260, Cl. 429-180.000.
Turney, Stephen D., to General Electric Company. Brightness control for a vacuum fluorescent displaycu4,495,445, Cl. 315-169.100.
Uba, Toshio, to Gates Rubber Company, The. Vibration resistant batterycu4,495,259, Cl. 429-161.000.
Uchida, Masaaki: *See—*
Kitahara, Tsuyoshi; Sone, Kohki; and Uchida, Masaaki, 4,494,374, Cl. 60-276.000.
Uchida, Ryohei; and Fujii, Toshifumi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic video reproducing apparatus having still picture reproducing functioncu4,495,525, Cl. 360-10.300.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop-restart systemcu4,494,497, Cl. 123-179.00B.
Ueda, Masanori; Takahashi, Ryousuke; and Takeuchi, Hidemaro, to Nippon Steel Corporation. Process for producing austenitic stainless steels less susceptible to rolling defectscu4,494,998, Cl. 148-2.000.
Ueda, Toshihiro; Imanishi, Masamichi; and Miyano, Takayoshi, to Suntory Limited. Method and dispenser for dispensing beercu4,494,681, Cl. 222-485.000.
Ueno, Tsuyoshi; Hashimoto, Shinichi; Matsuyama, Kouzou; and Wakao, Nobutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Imaging method using a charged insulating layercu4,494,857, Cl. 355-3.0CH.
Uherek, Vladimir; and Kersen, Matthew F., to Westinghouse Electric Corp. Elevator systemcu4,494,628, Cl. 187-29.00R.
Uhlig, Raimer, to Hilti Aktiengesellschaft. Method and assembly for fastening facade panels or facade supports in spaced relation to a support surfacecu4,494,347, Cl. 52-508.000.
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, to A/S Alfred Benzon. Process for producing gene products of plasmid having temperature dependent plasmid copy numbercu4,495,287, Cl. 435-231.000.
UMC Industries, Inc.: *See—*
Press, Irving D., 4,494,776, Cl. 285-55.000.
Umeki, Masakazu, to BOC Group plc, The. Process for nitrogen enrichmentcu4,494,966, Cl. 55-26.000.
Umemoto, Makoto: *See—*
Yagihara, Morio; Hirano, Tsumoru; Hirano, Mitsunori; and Umemoto, Makoto, 4,495,272, Cl. 430-381.000.
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Antibiotic oxanosine and process for the preparation thereofcu4,495,347, Cl. 536-24.000.
Union Camp Corporation: *See—*
Lawson, Nelson E.; and Amer, Gamal I., 4,495,095, Cl. 260-97.700.
Union Carbide Corporation: *See—*
Fu, Wallace Y., 4,495,093, Cl. 260-453.300.
Stamberger, Paul, 4,495,341, Cl. 528-110.000.
Union Oil Company of California: *See—*
Backlund, Peter S., 4,494,976, Cl. 71-28.000.
Switzer, Jay A., 4,495,046, Cl. 204-242.000.
Union Power Construction Company: *See—*
Waymire, Frank, 4,494,732, Cl. 254-134.30R.
Uniroyal, Inc.: *See—*
Feiccabrino, Joseph A., 4,495,372, Cl. 568-929.000.
United States of America
Agriculture: *See—*
Christianson, Donald D.; and Friedrich, John P., 4,495,207, Cl. 426-312.000.
Air Force: *See—*
Abrams, Richard L.; Henderson, David M.; Pinnow, Douglas A.; and Stephens, Ronald R., 4,494,827, Cl. 350-385.000.
Creed, Durwood L., 4,495,501, Cl. 343-7.700.
Lakin, Kenneth M., 4,495,466, Cl. 324-242.000.
Masak, Raymond J., 4,495,502, Cl. 343-380.000.
Shields, Michael W., 4,495,505, Cl. 343-821.000.
Wallquist, Donald L.; and Kuperman, Gilbert G., 4,494,838, Cl. 351-206.000.
Army: *See—*
Funke, Maurice F.; and Morris, Joseph W. (said Joseph W. Morris assors. to), 4,494,422, Cl. 74-867.000.
Magnuson, Roland A., 4,494,441, Cl. 89-38.000.
Seiler, James F. N., Jr., 4,494,563, Cl. 137-496.000.
Vanderbeck, William E., 4,494,331, Cl. 42-70.00D.
Energy: *See—*
Gross, Kenny C.; and Laug, Matthew T., 4,495,143, Cl. 376-251.000.
Korenko, Michael K., 4,494,987, Cl. 75-124.000.
Health and Human Services: *See—*
Karpetsky, Timothy P.; and Brown, Glenn E., 4,495,279, Cl. 435-6.000.
Interior: *See—*
Divers, Edward F.; Lascola, John C.; and Behers, Robert G., 4,494,894, Cl. 405-290.000.
National Aeronautics and Space Administration: *See—*
Banks, Bruce A., 4,495,044, Cl. 204-192.00C.
Kravitz, Marvin; Freedman, Larry A.; Fredd, Elmer H.; and Denef, Dan E., 4,495,520, Cl. 358-219.000.
Lauver, Richard W., 4,495,339, Cl. 526-262.000.
Navy: *See—*
Flood, Robert A.; Talkington, Howard R.; Wheelock, Richard A.; and Watts, Robert L., 4,494,938, Cl. 441-33.000.
Hamid, Michael; and Lionis, Anastasios, 4,494,835, Cl. 351-158.000.
Mathes, H. Bernard, 4,494,625, Cl. 181-213.000.
Moden, James R., 4,495,256, Cl. 429-17.000.
Rashleigh, Scott C., 4,495,411, Cl. 250-227.000.
Sheridan, Anthony A., 4,495,433, Cl. 310-329.000.
Spargo, John D., 4,494,760, Cl. 277-30.000.
Tabatabaie-Alavi, Kamal; Choudhury, Abu N. M. M.; Slater Gabriel, Nancy J.; and Fonstad, Clifton G., 4,494,995, Cl. 148-1.500.
Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., 4,494,373, Cl. 60-253.000.
Yoder, Max N., 4,495,511, Cl. 357-22.000.
U.S. Philips Corporation: *See—*
Gilliam, John E., 4,495,461, Cl. 324-86.000.
Kuppens, Bernardus J.; and Wardenaar, Hendrik C., 4,494,902, Cl. 414-223.000.
Notelteirs, Victor R., 4,495,436, Cl. 313-318.000.
Segarra, Gerard; and Allain, Jean L., 4,495,493, Cl. 340-825.500.
Thoone, Martinus L. G.; Khoe, Giok D.; Kuppers, Dieter; and Gustin, Pol A. G. J., 4,495,412, Cl. 250-227.000.
United Technologies Corporation: *See—*
Grudkowski, Thomas W., 4,495,431, Cl. 310-313.00B.
Unitika, Ltd.: *See—*
Hagiwara, Michiaki; and Tomohiro, Yoshitaka, 4,495,074, Cl. 210-695.000.
University of California, The Regents of the: *See—*
Hull, Maury L., 4,494,768, Cl. 280-612.000.
Norman, Anthony W.; and Mayer, Eberhard, 4,495,181, Cl. 514-167.000.
University of Rochester: *See—*
Chavin, Stephen I.; and Fay, Philip J., 4,495,175, Cl. 424-101.000.
Univerzita Komenskeho: *See—*
Chudy, Martin; Janik, Rudolf; and Povinec, Pavol, 4,495,420, Cl. 250-367.000.
UOP Inc.: *See—*
Barley, Geoffrey W., 4,494,794, Cl. 297-307.000.
Cleary, Michael T., 4,495,094, Cl. 260-97.600.
Cleary, Michael T.; and Laughlin, William C., 4,495,106, Cl. 260-419.000.
Harguindey, Julian E., 4,494,603, Cl. 166-231.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,495,357, Cl. 546-269.000.
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,495,349, Cl. 544-97.000.
Upmeier, Hartmut; and Schreiber, Thilo, to Windmoller & Holscher. Funnel member for single-screw extrudercu4,494,877, Cl. 366-76.000.
Uranium Pechiney Ugine Kuhlmann: *See—*
Maurel, Pierre, 4,495,159, Cl. 423-87.000.
Urethane Specialties, Inc.: *See—*
Brown, Richard A.; and Trew, John D., 4,494,698, Cl. 239-489.000.
Uroko Seisakusho Co., Ltd.: *See—*
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
USM Corporation: *See—*
McCarthy, Bruce C., 4,495,240, Cl. 428-319.100.
Usui, Katumi: *See—*
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.
Usui Kokusai Sangyo Kabushiki Kaisha: *See—*
Kubo, Naomi, 4,495,003, Cl. 148-15.500.
Uzuka, Tadashi: *See—*
Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,589, Cl. 144-213.000.

Kajikawa, Yoshimitsu; Souma, Keinosuke; Ogaki, Kohei; Uzuka, Tadashi; and Minato, Yoshihiko, 4,494,590, Cl. 144-213.000.
V.G. Isogas Limited: *See—*
Barrie, Andrew; and Freedman, Phillip A., 4,495,414, Cl. 250-288.000.
Vahlstrom, Richard; Keats, Dennis R.; and Lee, Peter T., to McDonnell Douglas Corporation. Computer rotate functioncu4,495,598, Cl. 364-900.000.
Valentine, Al L., to State Die & Engineering, Inc. Power operated rotatable clamping assemblycu4,494,739, Cl. 269-32.000.
Valeo: *See—*
Villeval, Denis, 4,494,669, Cl. 220-204.000.
Vallana, Franco: *See—*
Cerise, Osvaldo; Arru, Pietro; and Vallana, Franco, 4,495,039, Cl. 204-130.000.
Vallourec, S.A.: *See—*
Duret, Jean, 4,494,777, Cl. 285-55.000.
Valmet Oy: *See—*
Haantera, Antti I., 4,494,476, Cl. 114-260.000.
Vamvakas, Spiro: *See—*
Brown, Thomas A.; Dissosway, Marc A.; Peil, William; and Vamvakas, Spiro, 4,495,446, Cl. 315-206.000.
Van Bochove, Gijsbertus F. J.; and Somers, Petrus A. A. M., to Fokker B.V. Convertor apparatus for accurate and consistent non-destructive testing of objectscu4,494,410, Cl. 73-644.000.
Vanderbeck, William E., to United States of America, Army. Firearm safety devicecu4,494,331, Cl. 42-70.00D.
Vanderhider, James A.; and Lancaster, Gerald M., to Dow Chemical Company, The. Compositions containing polyether polyols and aliphatic primary aminescu4,495,081, Cl. 252-182.000.
VanderValk, Paul D., to Eastman Kodak Company. Electrophotographic elements containing polyamide interlayerscu4,495,263, Cl. 430-60.000.
Van Dyke, Helga M.; and DeGroot, Rudolph C., Sr., to Van Dyke, Helga M. Skin test device using I.C. comparator circuitcu4,494,554, Cl. 128-734.000.
Van Erden, Donald L.; Gould, Russell J.; and Matsunaga, Yukio A., to Signode Corporation. Method for producing polypropylene sheetcu4,495,124, Cl. 264-130.000.
Van Gheluwe, Joris E. A.: *See—*
Weaver, Robert L.; Van Gheluwe, Joris E. A.; and McKee, John A., 4,495,204, Cl. 426-16.000.
van Loveren, Augustinus G.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and van Loveren, Augustinus G., 4,495,091, Cl. 252-522.00R.
Vannier, Chantal: *See—*
Lacour, Bernard; Maillet, Marc; de Witte, Olivier; and Vannier, Chantal, 4,495,631, Cl. 372-38.000.
Van Pelt, Richard, to Storage Technology Corporation. Dual mode control system for controlling tape position in a reel to reel transport apparatuscu4,494,711, Cl. 242-184.000.
Van Wandelen, Henri, to Bremson Data Systems, Inc. Integrator for analyzing the spectral content of printing illuminationcu4,494,876, Cl. 356-404.000.
Van Winkle, George W.: *See—*
Carlson, Albert A.; Owen, Darrel M.; and Van Winkle, George W., 4,495,549, Cl. 362-62.000.
Varco International, Inc.: *See—*
Beaufort, Ronald E., 4,494,376, Cl. 60-421.000.
Varshney, Ramesh C. Test system for segmented memorycu4,495,603, Cl. 365-233.000.
Vasconcellos, Alfred: *See—*
Burdick, Thomas H.; Vasconcellos, Alfred; and Whitney, William G., 4,495,402, Cl. 219-214.000.
Vasicek, Vladimir: *See—*
Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, 4,494,578, Cl. 139-188.00A.
Vasovich, Dimitrije R. Size dresser for grinding wheelscu4,494,522, Cl. 125-11.0DF.
Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Primer coating composition of a fluorocarbon polymer and an amino alkyl alkoxy silanecu4,495,247, Cl. 428-422.000.
Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Coating composition of a fluorocarbon polymer and a polyamine curing agentcu4,495,248, Cl. 428-422.000.
Vasvari, Lelle: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.
VDO Adolf Schindling AG: *See—*
Collonia, Harald, 4,495,454, Cl. 318-663.000.
Veb Arzneimittelwerk Dresden: *See—*
Schmidt, Hans-Jorg; Franke, Joachim; Scheffler, Reingard; Tonjes, Heinz; Kammann, Gunter; and Dietz, Gunther, 4,495,351, Cl. 544-234.000.
Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg: *See—*
Pechau, Gerhard; Wyzgol, Ewald; and Jacob, Rudi, 4,494,427, Cl. 83-306.000.
Vegter, Herman J.: *See—*
Jansma, Wytze; Mars, Jan; Stoutjesdijk, Pieter G.; and Vegter, Herman J., 4,494,530, Cl. 127-69.000.
Velasco Scale Company: *See—*
Reeves, Robert H., Jr.; Chandler, Don G.; and Jorgensen, H. A., 4,494,583, Cl. 141-83.000.
Venardos, Dean G.; and Grieves, Colin G., to Standard Oil Company (Indiana); and Gulf Oil Corporation. Oil shale retorting and retort water purification processcu4,495,056, Cl. 208-11.00R.
Venkat, Chaya; and Walsh, Dennis E., to Mobil Oil Corporation. Increasing the cetane number of diesel fuel by partial oxidation cu4,494,961, Cl. 44-57.000.
Vercillo, Alfredo J.; and Kuehn, Arthur, to General Binding Corporation. Automatic reversing system for shreddercu4,495,456, Cl. 318-755.000.
Verdonck, Omer F.: *See—*
De Boodt, Marcel F. L. P.; and Verdonck, Omer F., 4,494,975, Cl. 71-25.000.
Vermont Toy Works, Inc.: *See—*
Winer, Gordon E., 4,494,756, Cl. 273-156.000.
Vernino, Raymond. Microphone pickup for musical instrumentscu4,495,641, Cl. 381-91.000.
Vertx Corporation: *See—*
Stutsman, Richard R., 4,494,675, Cl. 221-13.000.
Vetter, Harald: *See—*
Kros, Rudolf; and Vetter, Harald, 4,495,542, Cl. 361-301.000.
Vetter, Ronald F.; Hicks, Theodore A.; and Compton, Warren R., to United States of America, Navy. Fail safe rocket motorcu4,494,373, Cl. 60-253.000.
Vezin, Luc: *See—*
Guillaume, Paul; Vezin, Luc; and Dubi, Bernard, 4,494,923, Cl. 431-9.000.
Viberg, Rolf; Harrysson, Goran; and Kjelgaard, Tom, to Tetra Pak International AB. Method of making a packing laminate webcu4,495,016, Cl. 156-152.000.
Vickers, Roger S., to SRI International. Topographic data gathering methodcu4,495,500, Cl. 343-5.0CM.
Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu, 4,495,428, Cl. 307-490.000.
Kohri, Naomichi; Fukuda, Yutaka; and Muramatsu, Hiroshi, 4,495,535, Cl. 360-96.300.
Sasamura, Kohhei; and Moriyama, Masaru, 4,495,528, Cl. 360-40.000.
Sasamura, Kouhei, 4,495,531, Cl. 360-65.000.
Wada, Yoshiyo; and Takehara, Hideaki, 4,495,610, Cl. 369-126.000.
Vidal, Henri: *See—*
Wojciechowski, Longine J., 4,494,892, Cl. 404-6.000.
Vigliermo, Amerigo: *See—*
Rattin, Luciano; and Vigliermo, Amerigo, 4,494,866, Cl. 355-57.000.
Vilk, Peter; and Stephens, Alan, to B.H.F. (Engineering) Ltd. Forehearth for conditioning glasscu4,494,974, Cl. 65-337.000.
Villeval, Denis, to Valeo. Stopper for a heat exchanger circuitcu4,494,669, Cl. 220-204.000.
Virag, Sandor: *See—*
Meszaros, Zoltan; Knoll, Jozsef; Szentmiklosi, Peter; Hermecz, Istvan; Horvath, Agnes; Virag, Sandor; Vasvari, Lelle; and David, Agoston, 4,495,189, Cl. 514-258.000.
Viriyayuthakorn, Montri; and DeBoo, Robert V., to AT&T Technologies, Inc. Extrusion method and apparatuscu4,495,022, C.. 156-500.000.
Visciano, Joseph. Flexible flashlightcu4,495,550, Cl. 362-189.000.
Visu-Flex Company: *See—*
Spees, Arthur T., 4,494,659, Cl. 211-51.000.
Vodian, Morton A.: *See—*
Cook, William E.; Vodian, Morton A.; and Haunold, Otto, 4,495,150, Cl. 422-99.000.
Voest-Alpine Aktiengesellschaft: *See—*
Brettbacher, Franz; and Rudolf, Buchegger, 4,494,395, Cl. 72-203.000.
Vohrer, Christoph. Process for producing a reinforced tubecu4,495,018, Cl. 156-187.000.
Volejnicek, David: *See—*
Synek, Ervin H.; and Volejnicek, David, 4,494,466, Cl. 108-85.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Honig, Ernst-August, 4,494,640, Cl. 192-0.052.
Kruger, Hermann, 4,494,729, Cl. 251-229.000.
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Walker, Clarence O., to Texaco Inc. Method for releasing stuck drill pipe cu4,494,610, Cl. 166-301.000.
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Yagi, Shizuo; Otani, Junji; Fujii, Isao; and Kogure, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Stratified burn internal combustion enginecu4,494,504, Cl. 123-308.000.
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Yamada, Koji: *See*—
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Yamaji, Hiromasa; and Kobayashi, Yuji, to Sumitomo Heavy Industries, Ltd. Apparatus for stopping truck at preselected positioncu4,494,905, Cl. 414-584.000.

Yamakawa, Toshiro: *See*—
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,495,267, Cl. 430-106.600.

Yamamiya, Kunio: *See*—
Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, 4,495,407, Cl. 250-201.000.

Yamamoto, Hideaki: *See*—
Baji, Toru; Koizumi, Naohiko; Tsukada, Toshihisa; Yamamoto, Hideaki; Shimomoto, Yasuharu; and Tanaka, Yasuo, 4,495,409, Cl. 250-211.00J.

Yamamoto, Kenji: *See*—
Hayashi, Gentaro; Yamamoto, Kenji; and Kuraseko, Takao, 4,494,390, Cl. 68-23.700.

Yamamoto, Kuniyuki: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,494,623, Cl. 180-230.000.

Yamamuro, Sigeaki: *See*—
Hirano, Hiroyuki; Yamamuro, Sigeaki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,494,942, Cl. 474-28.000.

Yamaoka, Noboru: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.

Yamasa Shoyu Kabushiki Kaisha: *See*—
Fujita, Eiichi; Nagao, Yoshimitsu; Ikeda, Takao; and Inoue, Takehisa, 4,495,355, Cl. 546-209.000.

Yamazaki, Kengo: *See*—
Ohya, Masaki; Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,495,249, Cl. 428-516.000.

Yamazaki, Masaru: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,494,748, Cl. 271-288.000.

Yamazaki, Toshinori: *See*—
Matsuzaki, Masatoshi; Yamazaki, Toshinori; Myokan, Isao; Shima, Tetsuo; and Nomori, Hiroyuki, 4,495,262, Cl. 430-58.000.

Yan, Tsoung-yuan; and Lozano, Raymond L., to Mobil Oil Corporation. Leach apparatus including means to protect ion exchange resincu4,495,152, Cl. 422-159.000.

Yanagida, Tuneo, to Olympus Optical Co., Ltd. Method of processing information signal with respect to opto-magnetic record mediumcu4,495,530, Cl. 360-59.000.

Yanahashi, Shinichi: *See*—
Matsuura, Kazuo; Yamaoka, Noboru; Yanahashi, Shinichi; Usui, Katumi; and Miyoshi, Mituji, 4,495,334, Cl. 525-240.000.

Yang, Kuei H.: *See*—
Schwuttke, Guenter H.; and Yang, Kuei H., 4,494,300, Cl. 29-571.000.

Yano, Ryuji: *See*—
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,495,601, Cl. 365-1.000.

Yardney Corporation: *See*—
Fields, Larry D., 4,495,072, Cl. 210-238.000.

Yardy, Raymond: *See*—
George, David J.; Nguyen, Hue V.; and Yardy, Raymond, 4,495,623, Cl. 371-38.000.

Yasuda, Mitsuo: *See*—
Nagatomo, Hideaki; Kawahira, Hiroto; Nishizawa, Toshizo; and Yasuda, Mitsuo, 4,494,383, Cl. 62-196.200.

Yasuhara, Seishi, to Nissan Motor Company, Limited. Control system for a fuel injection internal combustion engine including a fuel injection rate detectorcu4,494,507, Cl. 123-357.000.

Yasui, Yasuyoshi: *See*—
Inui, Masaki; and Yasui, Yasuyoshi, 4,494,419, Cl. 74-477.000.

Yazaki, Mutsunobu: *See*—
Kimura, Hiroyuki; Yazaki, Mutsunobu; Taka, Hideo; and Masunaga, Makoto, 4,494,842, Cl. 354-173.110.

Yoder, David A. Bin level detector and filling switchcu4,495,388, Cl. 200-61.210.

Yoder, Max N., to United States of America, Navy. Permeable base transistor structurecu4,495,511, Cl. 357-22.000.

Yokohama Rubber Co. Ltd., The: *See*—
Obara, Masaaki; Tajima, Yoshio; and Suzuki, Yukiji, 4,495,236, Cl. 428-172.000.

Yokono, Hitoshi: *See*—
Azuma, Kazufumi; Nakatani, Mitsuo; Nate, Kazuo; Okunaka, Masaaki; and Yokono, Hitoshi, 4,495,218, Cl. 427-53.100.

Yokoyama, Shigeki; and Ohga, Kunihiko, to Fuji Photo Film Co., Ltd. Silver halide photographic materialscu4,495,275, Cl. 430-527.000.

Yong, Thomas S.: *See*—
Schlitt, Steven C.; Yong, Thomas S.; Roche, William J.; and Anderson, John W., Jr., 4,495,440, Cl. 313-492.000.

Yonker, John H.: *See*—
Williams, Charles R.; Yonker, John H.; and Thurman, Robert L., 4,494,608, Cl. 166-317.000.

Yoo, Jin S.; and Jaecker, John A., to Atlantic Richfield Company. Catalyst for conversion of hydrocarbonscu4,495,304, Cl. 502-66.000.

Yoo, Jin S.; and Jaecker, John A., to Atlantic Richfield Company. Catalyst for conversion of hydrocarbonscu4,495,305, Cl. 502-65.000.

Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu; and Teshima, Kenzo, 4,495,125, Cl. 264-132.000.

Yoshida, Kazuhiro, to Konishiroku Photo Industry Co., Ltd. Direct-positive silver halide photographic materialcu4,495,274, Cl. 430-523.000.

Yoshida, Kenichi; Ono, Kimizo; and Iwamoto, Tomio, to Sumitomo Electric Industries, Ltd. Optical connector systemcu4,494,823, Cl. 350-96.220.

Yoshida Kogyo K. K.: *See*—
Fukuroi, Takeo; Omori, Shigenori; and Tanaka, Akira, 4,494,922, Cl. 425-324.100.
Toishi, Yoshiyuki, 4,494,292, Cl. 29-408.000.

Yoshida Kogyo K.K.: *See*—
Kawakami, Koichi, 4,494,293, Cl. 29-408.000.

Yoshida, Toshio, to Toyo Shokuhin Kikai Kabushiki Kaisha. Intermittent driving system for synchronizing control of conveyor and dispensing systemscu4,495,584, Cl. 364-479.000.

Yoshikawa, Shoji: *See*—
Kodama, Hiroshi; Sakamoto, Masaharu; Ohshima, Ken; Yoshikawa, Shoji; Yamamiya, Kunio; and Kato, Kiichi, 4,495,407, Cl. 250-201.000.

Yoshikawa, Yukio: *See*—
Kurosu, Tomio; and Yoshikawa, Yukio, 4,494,846, Cl. 354-400.000.

Yoshimoto, Shoji: *See*—
Etoh, Tadaaki; Yano, Ryuji; Ishida, Kazuhiro; and Yoshimoto, Shoji, 4,495,601, Cl. 365-1.000.

Yoshimura, Toshimitsu: *See*—
Gotoda, Yusuke; and Yoshimura, Toshimitsu, 4,494,637, Cl. 192-48.400.

Yoshioka, Kentaro, to Oki Electric Industry Co., Ltd. Forming channel stops by selectively implanting impurity ions through field-oxide layer during later stage of MOS-device fabricationcu4,494,304, Cl. 29-578.000.

Young, Hartley F.; Remes, Wally A.; and Collins, John L., to Ralph McKay Limited. Rail fastener applicatorcu4,494,463, Cl. 104-17.00A.

Young, Robert W. Quick positioning cut-off guide for hand power sawscu4,494,434, Cl. 83-745.000.

Young, Terry G., to Joy Manufacturing Company. High pressure sensor basecu4,494,568, Cl. 137-561.00A.

Youngman, George, to Becton, Dickinson & Co. Toxic gas detection system calibratorcu4,494,399, Cl. 73-1.00G.

Yuta, Koichi: *See*—
Fujioka, Masato; Kobayashi, Katsuyoshi; Yuta, Koichi; and Nishihara, Nobuyoshi, 4,494,929, Cl. 432-59.000.

Zabotin, Viktor G.; Kosenko, Alexandr I.; Kozlov, Sergei P.; Pervyshin, Alexandr N.; Lukachev, Viktor P.; Mikhailov, Vladimir A.; Buryakov, Valery M.; Tokhunts, Roman D.; Yakovlev, Vladimir S.; Levin, Viktor Y., deceased; and by Levin, Sofia N., administratrix. Device for gas jet cutting of materialscu4,494,925, Cl. 431-158.000.

Zado, Frank M., to AT&T Technologies, Inc. Soldering fluxcu4,495,007, Cl. 148-23.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Shimada, Nobuyoshi; Naganawa, Hiroshi; Takita, Tomohisa; Hamada, Masa; and Takeuchi, Tomio, 4,495,347, Cl. 536-24.000.

Zalkin, Michel, to Etablissements Andre Zalkin et Cie. Torsional torque controlled friction screwing head for cap installationcu4,494,358, Cl. 53-331.500.

Zasio, John J., to Storage Technology Partners. CMOS LSI and VLSI chips having internal delay testing capabilitycu4,495,628, Cl. 377-70.000.

Zasio, John J.; and Cooke, Larry, to Storage Technology Partners. CMOS scannable latchcu4,495,629, Cl. 377-70.000.

Zawadzki, Thomas: *See*—
Hudgin, Donald E.; and Zawadzki, Thomas, 4,495,311, Cl. 523-126.000.

Zeda Computers International Limited: *See*—
Bosen, Robert J., 4,495,572, Cl. 364-200.000.

Zellmer, Joel A., to Hewlett-Packard Company. Timing analyzer with combination transition and duration triggercu4,495,642, Cl. 382-1.000.

Zemke, Edward H.: *See*—
Guenther, Kenneth L.; and Zemke, Edward H., 4,494,742, Cl. 270-58.000.

Zenitani, Toshio; and Tabuse, Katsuyoshi. Method and apparatus for surgical operation using microwavescu4,494,539, Cl. 128-303.100.

Zenker, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Synchronizing device, especially for the transmission of a motor vehiclecu4,494,638, Cl. 192-48.910.

Zerweck, Klaus: *See*—
Bauser, Herbert; Kurz, Edmund; Schindler, Bernd; Zerweck, Klaus; Bolch, Thomas; Haller, Andreas; and Mager, Theo, 4,495,232, Cl. 428-41.000.

Zestar, Lawrence P.: *See*—
Farnham, Robert A.; Zestar, Lawrence P.; and Bertelsen, Corey A., 4,495,058, Cl. 208-11.00R.

Ziemann, Heinz: *See*—
Werner, Friedrich; Blank, Heinz U.; Gramm, Gunther; Braden, Rudolf; and Ziemann, Heinz, 4,495,369, Cl. 564-480.000.

Ziemba, Richard T., to General Electric Company. Explosive projectilecu4,494,459, Cl. 102-235.000.

Zimmerman, Morris: *See*—
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,495,197, Cl. 514-210.000.

Zincroksid S.p.A.: *See*—
Bruno, Roberto; and Memmi, Massimo, 4,495,008, Cl. 148-31.500.

Zunker, David W., to Du Pont de Nemours, E. I., and Company. Inorganic fillers modified with vinyl alcohol polymer and cationic melamine-formaldehyde resincu4,495,245, Cl. 428-403.000.

Zvs Vyzkumnevyvojovy ustav, koncernova: *See*—
Cech, Miloslav; Slezak, Adolf; and Vasicek, Vladimir, 4,494,578, Cl. 139-188.00A.

Zylbert, Thaddeus J., to Singer Company, The. Buttonhole foot and shank assemblycu4,494,471, Cl. 112-235.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ag-Bag Corporation: *See—*
Lee, Richard H., Re. 31,810, Cl. 141-114.000.

Aldegheri, Roberto: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Brivio, Lodovico R.: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Burlington Industries, Inc.: *See—*
London, Joe F., Jr.; and Pugh, Charles D., Re. 31,808, Cl. 57-6.000.

Cavazzana, Andrea: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, to Orthofix S.r.l. External axial fixation unitcuRe. 31,809, Cl. 128-92.00A.

De Bastiani, Giovanni: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Faccioli, Giovanni: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Foreman, Ronald. Baseball bat with modified internal air pressurecuRe. 31,811, Cl. 273-72.00A.

Fugate, Philip E.; and Roy, Kenneth L., to Ledex, Inc. Print wire solenoidcuRe. 31,813, Cl. 335-271.000.

Knowles, James. Truss-web connectorcuRe. 31,807, Cl. 52-693.000.

Kuntz, Emile, to Rhone-Poulenc Industries. Catalytic hydroformylation of olefinscuRe. 31,812, Cl. 568-454.000.

Ledex, Inc.: *See—*
Fugate, Philip E.; and Roy, Kenneth L., Re. 31,813, Cl. 335-271.000.

Lee, Richard H., to Ag-Bag Corporation. Agricultural bag loading apparatus braking mechanismcuRe. 31,810, Cl. 141-114.000.

London, Joe F., Jr.; and Pugh, Charles D., to Burlington Industries, Inc. Novelty yarn productioncuRe. 31,808, Cl. 57-6.000.

Lubin, Barry D., to Motorola, Inc. Three-party conference circuit for digital time-division-multiplex communication systemscuRe. 31,814, Cl. 370-62.000.

Motorola, Inc.: *See—*
Lubin, Barry D., Re. 31,814, Cl. 370-62.000.

Orthofix S.r.l.: *See—*
Danieletto, Giuseppina; De Bastiani, Giovanni; Faccioli, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Cavazzana, Andrea, Re. 31,809, Cl. 128-92.00A.

Pugh, Charles D.: *See—*
London, Joe F., Jr.; and Pugh, Charles D., Re. 31,808, Cl. 57-6.000.

Rhone-Poulenc Industries: *See—*
Kuntz, Emile, Re. 31,812, Cl. 568-454.000.

Roy, Kenneth L.: *See—*
Fugate, Philip E.; and Roy, Kenneth L., Re. 31,813, Cl. 335-271.000.

LIST OF DESIGN PATENTEES

Agfa-Gevaert AG: *See—*
Schlagheck, Norbert, 277,288, Cl. D16-27.000.

Allsop, Ivor J. Phonorecord cleanercu277,326, 1-22-85, Cl. D32-35.000.

Altena Salotti S.n.c.: *See—*
Giudici, Gianbattista, 277,244, Cl. D6-381.000.

Altena Salotti s.r.l: *See—*
Giudici, Gianbattista, 277,242, Cl. D6-381.000.
Giudici, Gianbattista, 277,243, Cl. D6-381.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Hand-held pipetting devicecu277,313, 1-22-85, Cl. D24-55.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Hand-held pipetting devicecu277,314, 1-22-85, Cl. D24-55.000.

Alvarez, Michael A.; Fried, George; and Payne, George, to Manostat Corporation. Base for a pipetting devicecu277,315, 1-22-85, Cl. D24-55.000.

American Commercial Incorporated: *See—*
Lax, Michael, 277,253, Cl. D7-320.000.

American Mobile Advertising Corp.: *See—*
Nelson, Eugene, 277,298, Cl. D20-10.000.
Nelson, Eugene. 277,299, Cl. D20-10.000.

Appel, Mel; and Kress, George, to Appel, Mel. Combined toy sandbox and siftercu277,300, 1-22-85, Cl. D21-59.000.

Arend, Rene, to Restaurant Technology, Inc. Cooked meat productcu277,235, 1-22-85, Cl. D1-199.000.

Aspen Recreational Products, Ltd.: *See—*
Matsuda, Hari, 277,277, Cl. D14-33.000.
Matsuda, Hari, 277,278, Cl. D14-33.000.
Matsuda, Hari, 277,279, Cl. D14-33.000.

Associated Mills, Inc.: *See—*
Grube, Clifford E., 277,305, Cl. D23-3.000.

AT&T Bell Laboratories: *See—*
Barton, William L., III; Peterson, Edward J.; and Sylvester, Gordon E., 277,282, Cl. D14-59.000.

Baer, William F. Combined router and beveler for glasscu277,287, 1-22-85, Cl. D15-124.000.

Bank, Herbert M., to Maryland Cup Corporation. Molded edible containercu277,234, 1-22-85, Cl. D1-122.000.

Barton, William L., III; Peterson, Edward J.; and Sylvester, Gordon E., to AT&T Bell Laboratories. Conference telephone microphone control unitcu277,282, 1-22-85, Cl. D14-59.000.

Bastien, Henri, to Societe Anonyme Fonderies du Lion. Heatercu277,308, 1-22-85, Cl. D23-97.000.

Baty, Jess G. Hoe headcu277,258, 1-22-85, Cl. D8-11.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Extendable tie rackcu277,248, 1-22-85, Cl. D6-324.000.

Bernard, Claude, to Charvoz-Carsen Corporation. Collapsible tablecu277,250, 1-22-85, Cl. D6-420.000.

Boeing Company, The: *See—*
White, Thomas H., 277,239, Cl. D6-356.000.

Bosshardt, William, to Polychrome Corporation. Printing plate processor (II)cu277,293, 1-22-85, Cl. D18-13.000.

Bosshardt, William, to Polychrome Corporation. Printing plate processorcu277,294, 1-22-85, Cl. D18-13.000.

Brooks, Steven: *See—*
Dunbar, Jack G.; and Brooks, Steven, 277,240, Cl. D6-381.000.

Brunner, Robert D.: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 277,283, Cl. D14-100.000.

Burnett, Kevin P.: *See—*
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P., 277,270, Cl. D11-158.000.

Camino Laboratories: *See—*
Knute, Wallace L., 277,267, Cl. D10-60.000.

Carrier Corporation: *See—*
Yamamoto, Kentaro, 277,309, Cl. D23-141.000.

Cass, George R. Boxing glovecu277,238, 1-22-85, Cl. D2-361.000.

Cesaroni, William C., to Dart Industries Inc. Handlecu277,257, 1-22-85, Cl. D7-394.000.

Chan, David M. F.; and Chan, Michael L. F. Suspended holder for plants, candles or the likecu277,247, 1-22-85, Cl. D6-405.000.

Chan, Michael L. F.: *See—*
Chan, David M. F.; and Chan, Michael L. F., 277,247, Cl. D6-405.000.

Charvoz-Carsen Corporation: *See—*
Bernard, Claude, 277,250, Cl. D6-420.000.

Corning Glass Works: *See—*
Gulotta, Gerald D., 277,251, Cl. D7-20.000.
Gulotta, Gerald D., 277,252, Cl. D7-40.000.

Culpepper, Ronnie. Clockcu277,263, 1-22-85, Cl. D10-26.000.

Cutlip, David S.; and Cutlip, Judyth A. Velocipede horncu277,268, 1-22-85, Cl. D10-120.000.

Cutlip, Judyth A.: *See—*
Cutlip, David S.; and Cutlip, Judyth A., 277,268, Cl. D10-120.000.

Darrell, Jack. Combination reel housing and retractable dual cable unit for securing a bicyclecu277,259, 1-22-85, Cl. D8-358.000.
Dart Industries Inc.: *See—*
Cesaroni, William C., 277,257, Cl. D7-394.000.
Picozza, Augusto A., 277,256, Cl. D7-394.000.
Davey, Brian, to Lion Brush Works Limited. Cosmetic compactcu277,324, 1-22-85, Cl. D28-77.000.
Deal, Charles E. Electric guitarcu277,291, 1-22-85, Cl. D17-14.000.
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P. Ornament for table or other supporting surfacecu277,270, 1-22-85, Cl. D11-158.000.
Deeley, Lawrence: *See—*
Deeley, Frank; Deeley, Lawrence; and Burnett, Kevin P., 277,270, Cl. D11-158.000.
Deruntz, William R. Bottled water dispenser insertcu277,255, 1-22-85, Cl. D7-387.000.
Dickens, James A., to Rucks, Percy O. Collapsible reelcu277,260, 1-22-85, Cl. D8-358.000.
Dickerson, William R. Control panelcu277,275, 1-22-85, Cl. D13-35.000.
Drackett Company, The: *See—*
Jones, David A., 277,262, Cl. D9-306.000.
Dunbar Furniture, Inc.: *See—*
Dunbar, Jack G.; and Brooks, Steven, 277,240, Cl. D6-381.000.
Dunbar, Jack G., 277,249, Cl. D6-483.000.
Dunbar, Jack G.; and Brooks, Steven, to Dunbar Furniture, Inc. Sofa or similar articlecu277,240, 1-22-85, Cl. D6-381.000.
Dunbar, Jack G., to Dunbar Furniture, Inc. Combined table and side extension unitcu277,249, 1-22-85, Cl. D6-483.000.
Dupro AG: *See—*
Hug, Niklaus, 277,325, Cl. D32-22.000.
Eisenmenger, Daryl L. Set of retractable ear plugscu277,317, 1-22-85, Cl. D24-67.000.
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., to Fortune Systems Corporation. Computer consolecu277,283, 1-22-85, Cl. D14-100.000.
English, Helen B. Theatre structurecu277,318, 1-22-85, Cl. D25-7.000.
Ernest, Robert O., to Sunbeam Corporation. Steam ironcu277,327, 1-22-85, Cl. D32-70.000.
Fiat Products, Inc.: *See—*
Lax, Michael S., 277,306, Cl. D23-55.000.
FIG. 1 is a front elevational view of a wheel spider showing my new design, , it being understood that the broken lines are for illustrative purposes only: *See—*
Frazee, Raymond D., 277,274, Cl. D12-211.000.
Firestone Tire & Rubber Company, The: *See—*
Sladky, Donald J.; and Vande Water, William J., 277,272, Cl. D12-146.000.
Fortune Systems Corporation: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 277,283, Cl. D14-100.000.
Frazee, Raymond D., to FIG. 1 is a front elevational view of a wheel spider showing my new design, , it being understood that the broken lines are for illustrative purposes only; and Indus Wheel Company, Division of Carlisle Corporation. Wheel spidercu277,274, 1-22-85, Cl. D12-211.000.
Frazier, Alvin. Pencu277,296, 1-22-85, Cl. D19-42.000.
Fried, George: *See—*
Alvarez, Michael A.; Fried, George; and Payne, George, 277,313, Cl. D24-55.000.
Alvarez, Michael A.; Fried, George; and Payne, George, 277,314, Cl. D24-55.000.
Alvarez, Michael A.; Fried, George; and Payne, George, 277,315, Cl. D24-55.000.
Fubershaw, Gerard A.: *See—*
Empson, Edward H.; Brunner, Robert D.; and Fubershaw, Gerard A., 277,283, Cl. D14-100.000.
Gant, Clifford E. Handle for disposable razor blade cartridgescu277,321, 1-22-85, Cl. D28-46.000.
Giudici, Gianbattista, to Altena Salotti s.r.1. Seatcu277,242, 1-22-85, Cl. D6-381.000.
Giudici, Gianbattista, to Altena Salotti s.r.1. Seatcu277,243, 1-22-85, Cl. D6-381.000.
Giudici, Gianbattista, to Altena Salotti S.n.c. Seatcu277,244, 1-22-85, Cl. D6-381.000.
Gregory, John R. Chest protectorcu277,236, 1-22-85, Cl. D2-27.000.
Grube, Clifford E., to Associated Mills, Inc. Water filtercu277,305, 1-22-85, Cl. D23-3.000.
Gulotta, Gerald D., to Corning Glass Works. Serving dish or the likecu277,251, 1-22-85, Cl. D7-20.000.
Gulotta, Gerald D., to Corning Glass Works. Cover for a baking dish or the likecu277,252, 1-22-85, Cl. D7-40.000.
Haas, Ulrich J., to Optyl Corporation. Eyeglass framecu277,290, 1-22-85, Cl. D16-117.000.
High Technology Solutions, Inc.: *See—*
Horne, Gary D., 277,284, Cl. D14-100.000.
Hollenbach, David A. Pivotable mailbox signalcu277,328, 1-22-85, Cl. D99-29.000.
Horne, Gary D., to High Technology Solutions, Inc. Keyboardcu277,284, 1-22-85, Cl. D14-100.000.
Hug, Niklaus, to Dupro AG. Vacuum cleanercu277,325, 1-22-85, Cl. D32-22.000.
Indus Wheel Company, Division of Carlisle Corporation: *See—*
Frazee, Raymond D., 277,274, Cl. D12-211.000.
Iwatsu Electric Co., Ltd.: *See—*
Tsukamoto, Masakazu; and Tsukiyama, Satoru, 277,281, Cl. D14-53.000.
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CLASS 188

65.5 4,494,629
71.8 4,494,630
153 R 4,494,631
269 4,494,632
329 4,494,633
380 4,494,634

CLASS 192

0.052 4,494,639
4,494,640
0.076 4,494,641
12 C 4,494,635
41 A 4,494,636
48.4 4,494,637
48.91 4,494,638
106.2 4,494,642

CLASS 198

392 4,494,643
409 4,494,644
414 4,494,645
459 4,494,646
494 4,494,647
500 4,494,648
718 4,494,649

CLASS 200

6 B 4,495,387
61.21 4,495,388
83 P 4,495,389
145 4,495,390
153 J 4,495,391

CLASS 201

28 4,495,031

CLASS 202

105 4,495,032
118 4,495,033
181 4,495,034

CLASS 203

23 4,495,035

CLASS 204

59 R 4,495,036
70 4,495,037
129.2 4,495,038
130 4,495,039
155 4,495,040
158 R 4,495,041
159.14 4,495,042
176 4,495,043
192 C 4,495,044
224 R 4,495,045
242 4,495,046
245 4,495,047
267 4,495,048
292 4,495,049
408 4,495,050
4,495,051
435 4,495,052
4,495,053

CLASS 206

45.34 4,494,650
328 4,494,651
366 4,494,652
370 4,494,653
562 4,494,654

CLASS 208

8 R 4,495,054
10 4,495,055
11 R 4,495,056
4,495,057
4,495,058
4,495,059
48 Q 4,495,060
89 4,495,061
111 4,495,062
113 4,495,063
120 4,495,064

CLASS 209

243 4,495,065
524 4,494,656
569 4,494,655
608 4,495,066
636 4,494,657

CLASS 210

87 4,495,067
91 4,495,068
114 4,495,069
139 4,495,070
230 4,495,071
238 4,495,072
448 4,495,073
695 4,495,074

CLASS 211

49 R 4,494,658
51 4,494,659
69.1 4,494,660
87 4,494,661

CLASS 215

232 4,494,663
252 4,494,664
330 4,494,665

CLASS 219

10.55 E 4,495,392
69 C 4,495,394
69 M 4,495,393
73.1 4,495,395
85 G 4,495,396
93 4,495,397
121 LG 4,495,398
121 PY 4,495,399
125.12 4,495,400
136 4,495,401
214 4,495,402
233 4,495,403
281 4,495,404
510 4,495,405
528 4,495,406

CLASS 220

3 4,494,666
19 4,494,667
90.4 4,494,668
204 4,494,669
235 4,494,670
256 4,494,671
263 4,494,672
288 4,494,673
306 4,494,674

CLASS 221

13 4,494,675

CLASS 222

63 4,494,676
4,494,677
77 4,494,678
151 4,494,679
321 4,494,680
485 4,494,681
551 4,494,682

CLASS 223

51 4,494,683

CLASS 224

39 4,494,684

CLASS 227

41 4,494,685
147 4,494,686

CLASS 228

47 4,494,687
180 A 4,494,688

CLASS 229

30 4,494,689

CLASS 232

22 4,494,690

CLASS 235

470 4,494,691

CLASS 236

59 4,494,692
100 4,494,693

CLASS 238

2 4,494,694
265 4,494,695

CLASS 239

90 4,494,696
124 4,494,697
489 4,494,698
499 4,494,699
533.3 4,494,700
585 4,494,701

CLASS 242

18 R 4,494,702
55.19 A 4,494,703
56.1 4,494,704
59 4,494,705
65 4,494,706
67.2 4,494,707
67.3 R 4,494,708
107.6 4,494,709
156 4,494,710
184 4,494,711
191 4,494,712

CLASS 244

15 4,494,713
98 4,494,714
134 A 4,494,715
213 4,494,716

CLASS 246

28 F 4,494,717

CLASS 248

1 4,494,718
27.1 4,494,719
371 4,494,720
406.2 4,494,721
621 4,494,722
635 4,494,723

CLASS 249

148 4,494,724
219 R 4,494,725

CLASS 250

201 4,495,407
203 R 4,495,408
211 J 4,495,409
214 AG 4,495,410
227 4,495,411
4,495,412
252.1 4,495,413
288 4,495,414
336.1 4,495,415
338 4,495,416
343 4,495,417
4,495,418
363 S 4,495,419
367 4,495,420
551 4,495,421
578 4,495,422

CLASS 251

29 4,494,726
64 4,494,727
149.9 4,494,728
229 4,494,729
309 4,494,730
355 4,494,731

CLASS 252

8.55 E 4,495,336
32.7 E 4,495,075
4,495,088
38 4,495,076
31.5 A 4,495,077
62.2 4,495,078
106 4,495,079
179 4,495,080
182 4,495,081
194 4,495,082
299.1 4,495,083
301.17 4,495,084
301.4 F 4,495,085
314 4,495,086
315.7 4,495,087
364 4,495,089
372 4,495,090
522 R 4,495,091
559 4,495,092

CLASS 254

134.3 R 4,494,732

CLASS 256

10 4,494,733

CLASS 260

97.6 4,495,094
97.7 4,495,095
112 B 4,495,096
112.5 T 4,495,097
239.3 T 4,495,101
239.5 4,495,102
351.1 4,495,103
396 R 4,495,104
414 4,495,105
419 4,495,106
453 P 4,495,107
453.3 4,495,093
453.7 4,495,108
465.3 4,495,109
544 A 4,495,110
932 4,495,111

CLASS 261

41 D 4,495,112
44 F 4,495,115
64 R 4,495,113
81 4,495,114

CLASS 264

1.2 4,495,116
1.4 4,495,117
25 4,495,118
37 4,495,119
51 4,495,120
56 4,495,121
65 4,495,122
69 4,495,123
130 4,495,124
132 4,495,125
137 4,495,126
157 4,495,127
211 4,495,128
235 4,495,129
255 4,495,130
256 4,495,131
293 4,495,132
504 4,495,133
516 4,495,134
553 4,495,135

CLASS 266

45 4,494,734
218 4,494,735
265 4,494,736
281 4,494,737

CLASS 267

140 4,494,738

CLASS 269

32 4,494,739

CLASS 270

31 4,494,740
39 4,494,741
58 4,494,742

CLASS 271

11 4,494,743
34 4,494,744
95 4,494,745
164 4,494,746
263 4,494,747
288 4,494,748

CLASS 272

93 4,494,750
117 4,494,751
134 4,494,662

CLASS 273

72 A Re.31,811
73 A 4,494,752
113 4,494,753
148 B 4,494,754
4,494,755
156 4,494,756
183 C 4,494,757

CLASS 277

14 V 4,494,758
22 4,494,749
25 4,494,759
30 4,494,760
67 4,494,761
206 R 4,494,762

CLASS 280

1.175 4,494,763
293 4,494,764
432 4,494,765
444 4,494,766
612 4,494,767
4,494,768
630 4,494,769
685 4,494,770
711 4,494,771
712 4,494,772
775 4,494,773
806 4,494,774

CLASS 285

26 4,494,775
55 4,494,776
4,494,777
146 4,494,778
159 4,494,779
177 4,494,780

CLASS 290

44 4,495,423
53 4,495,424

CLASS 292

60 4,494,781
96 4,494,782
155 4,494,783
233 4,494,784

CLASS 294

1 R 4,494,785
26 4,494,786
147 4,494,787
161 4,494,788

CLASS 296

97 H 4,494,789
154 4,494,790

CLASS 297

45 4,494,791
63 4,494,792
85 4,494,793
307 4,494,794
355 4,494,795
440 4,494,796

CLASS 298

5 4,494,797
17.6 4,494,798

CLASS 299

31 4,494,799

CLASS 303

6 A 4,494,800
92 4,494,801

CLASS 307

297 4,495,425
453 4,495,426
469 4,495,427
490 4,495,428
491 4,495,429

CLASS 308

3.8 4,494,802
4,494,803

CLASS 310

198 4,495,430
313 B 4,495,431
328 4,495,432
329 4,495,433
338 4,495,434

CLASS 312

211 4,494,804
215 4,494,805
333 4,494,806

CLASS 313

231.31 4,495,435
318 4,495,436
388 4,495,441
403 4,495,437
412 4,495,438
4,495,439
492 4,495,440

CLASS 315

3 4,495,442
58 4,495,443
82 4,495,444
169.1 4,495,445
206 4,495,446
241 P 4,495,447

CLASS 318

54 4,495,448
60 4,495,449
138 4,495,450
150 4,495,451
444 4,495,452
568 4,495,453
663 4,495,454
696 4,495,455
755 4,495,456

CLASS 323

28 4,495,555

CLASS 324

57 R 4,495,458
72 4,495,459
77 A 4,495,460
86 4,495,461
120 4,495,462
142 4,495,463
174 4,495,464
232 4,495,465
242 4,495,466
244 4,495,467

CLASS 328

155 4,495,468

CLASS 330

2 4,495,469
9 4,495,470
151 4,495,471
277 4,495,472

CLASS 331

10 4,495,473
11 4,495,474
12 4,495,475
111 4,495,476

CLASS 332

10 4,495,477

CLASS 333

230 4,495,478
238 4,495,479

CLASS 335

199 4,495,480
271 Re.31,813

CLASS 337

349 4,495,481

CLASS 338

21 4,495,482
314 4,495,524

CLASS 339

17 CF 4,494,807
21 R 4,494,808
75 P 4,494,809
89 M 4,494,810
94 R 4,494,811
95 B 4,494,812
99 R 4,494,813
112 R 4,494,814
123 4,494,815
177 R 4,494,816
4,494,817
192 R 4,494,818

CLASS 340

52 D 4,495,484
365 C 4,495,485
546 4,495,486
572 4,495,487
606 4,495,488
664 4,495,489
709 4,495,490
4,495,491
783 4,495,492
825.06 4,495,494
825.45 4,495,495
825.5 4,495,493
825.54 4,495,496
825.63 4,495,497
825.79 4,495,498
970 4,495,483

CLASS 343

5 CM 4,495,500
5 DD 4,495,499
7.7 4,495,501
380 4,495,502
746 4,495,503
779 4,495,504
821 4,495,505
909 4,495,506

CLASS 346

76 PH 4,495,507
159 4,495,508
215 4,495,509

CLASS 350

1.4 4,494,819
4.1 4,494,820
6.5 4,494,821
96.21 4,494,822
96.22 4,494,823
334 4,494,824
343 4,494,825
360 4,494,826
385 4,494,827
427 4,494,828
464 4,494,829
486 4,494,830

CLASS 351

41 4,494,831
4,494,832
4,494,833
153 4,494,834
158 4,494,835
204 4,494,836
4,494,837
206 4,494,838

CLASS 353

101 4,494,839
4,494,840

CLASS 354

21 4,494,841
173.11 4,494,842
214 4,494,843
241 4,494,844
297 4,494,845
400 4,494,846
403 4,494,847
4,494,848
406 4,494,849
416 4,494,850
421 4,494,851
467 4,494,852
478 4,494,853
484 4,494,854

CLASS 355

1 4,494,855
3 CH 4,494,857
3 R 4,494,856
3 TR 4,494,858
5 4,494,859
13 4,494,860
14 C 4,494,862
14 R 4,494,861
15 4,494,863
22 4,494,864
32 4,494,865
57 4,494,866
73 4,494,867

CLASS 356

1 4,494,868
36 4,494,869
152 4,494,870
315 4,494,871
328 4,494,872
350 4,494,873
376 4,494,874
402 4,494,875
404 4,494,876

CLASS 357

5 4,495,510
22 4,495,511
34 4,495,512
43 4,495,513
67 4,495,514
81 4,495,515

CLASS 358

54 4,495,516
75 4,495,517
113 4,495,518
139 4,495,519
219 4,495,520
256 4,495,521
280 4,495,522
293 4,495,523

CLASS 360

10.3 4,495,525
15 4,495,526
33.1 4,495,527
40 4,495,528
46 4,495,529
59 4,495,530
65 4,495,531
71 4,495,532
72.2 4,495,533
74.1 4,495,534
96.3 4,495,535

CLASS 361

91 4,495,536
98 4,495,537
115 4,495,538
124 4,495,539
172 4,495,540
225 4,495,541
301 4,495,542
4,495,543
323 4,495,544
384 4,495,545
398 4,495,546
400 4,495,547
413 4,495,548

CLASS 362

62 4,495,549
189 4,495,550
205 4,495,551
297 4,495,552
311 4,495,553

CLASS 363

21 4,495,554
59 4,495,556
89 4,495,557

CLASS 364

148 4,495,559
154 4,495,560
167 4,495,561
200 4,495,562
4,495,563
4,495,564
4,495,565
4,495,566
4,495,567
4,495,568
4,495,569
4,495,570
4,495,571
4,495,572
4,495,573
4,495,574
4,495,575
424 4,495,577
424.1 4,495,457
4,495,576
426 4,495,578
431.07 4,495,579
450 4,495,580
466 4,495,581
469 4,495,582
471 4,495,583
479 4,495,584
487 4,495,585
4,495,586
507 4,495,587
513 4,495,588
563 4,495,558
565 4,495,589
716 4,495,590
724 4,495,591
754 4,495,592
757 4,495,593
900 4,495,594
4,495,595
4,495,596
4,495,597
4,495,598
4,495,599
4,495,600

CLASS 365

1 4,495,601
104 4,495,602
233 4,495,603

CLASS 366

76 4,494,877
341 4,494,878

CLASS 367

25 4,495,604
33 4,495,605
86 4,495,606

CLASS 368

76 4,494,879
232 4,494,880

CLASS 369

6 4,495,607
33 4,495,608
44 4,495,609
126 4,495,610
170 4,495,611
216 4,495,612
270 4,495,613

CLASS 370

58 4,495,614
4,495,615
62 Re.31,814
4,495,616
66 4,495,618
86 4,495,617
104 4,495,619
118 4,495,620

CLASS 371

6 4,495,621
20 4,495,622
38 4,495,623

CLASS 372

4,495,631

CLASS 373

93 4,495,624
107 4,495,625

CLASS 374

124 4,494,881

CLASS 375

19 4,495,626

CLASS 376

171 4,495,137
172 4,495,136
203 4,495,138
4,495,139
207 4,495,140
251 4,495,141
4,495,142
4,495,143
255 4,495,144
261 4,495,145
4,495,146
283 4,495,147

CLASS 377

6 4,495,627
70 4,495,628
4,495,629
110 4,495,630

CLASS 378

40 4,495,632
55 4,495,633
56 4,495,635
87 4,495,636
173 4,495,634

CLASS 381

1 4,495,637
27 4,495,638
51 4,495,639
61 4,495,640
91 4,495,641
94 4,495,643

CLASS 382

1 4,495,642
3 4,495,644
6 4,495,645
13 4,495,646

CLASS 383

5 4,494,592

CLASS 384

307 4,494,882
439 4,494,883

CLASS 400

144.2 4,494,884
145.2 4,494,885
208 4,494,886
568 4,494,887

CLASS 403

4 4,494,889
267 4,494,890

CLASS 404

4 4,494,891
6 4,494,892

CLASS 405

172 4,494,893
290 4,494,894

CLASS 408

236 4,494,895

CLASS 410

148 4,494,896
154 4,494,897

CLASS 413

14 4,494,898

CLASS 414

22 4,494,899
27 4,494,900
28 4,494,901
223 4,494,902
376 4,494,903
491 4,494,904
584 4,494,905
719 4,494,906
749 4,494,907

CLASS 415

206 4,494,908

CLASS 416

190 4,494,909
226 4,494,910

CLASS 417

222 4,494,911
347 4,494,912
349 4,494,913

CLASS 418

55 4,494,914
61 B 4,494,915
4,494,916
69 4,494,917
260 4,494,918

CLASS 419

57 4,495,148

CLASS 422

65 4,495,149
99 4,495,150
102 4,495,151
159 4,495,152
171 4,495,153
203 4,495,154
248 4,495,155

CLASS 423

54 4,495,157
65 4,495,158
87 4,495,159
158 4,495,160
167 4,495,161
171 4,495,162
244 4,495,163
266 4,495,164
321 R 4,495,165
329 4,495,166
339 4,495,167

CLASS 424

45 4,495,168
47 4,495,169
48 4,495,170
58 4,495,171
61 4,495,172
70 4,495,173
78 4,495,174
101 4,495,175
128 4,495,176
147 4,495,177
286 4,495,200

CLASS 425

83.1 4,494,919
190 4,494,920
198 4,494,921
324.1 4,494,922

CLASS 426

16 4,495,204
104 4,495,205
250 4,495,206
312 4,495,207
335 4,495,208
392 4,495,209
422 4,495,210
4,495,211
492 4,495,212
548 4,495,213
557 4,495,214

CLASS 427

6 4,495,215
25 4,495,216
27 4,495,217
53.1 4,495,218
82 4,495,219
4,495,220
88 4,495,221
89 4,495,222
215 4,495,223
222 4,495,224
236 4,495,225
326 4,495,226
373 4,495,227
384 4,495,156
385.5 4,495,228
388.2 4,495,229

CLASS 428

13 4,495,230
36 4,495,231
41 4,495,232
81 4,495,233
122 4,495,234
137 4,495,235
172 4,495,236
178 4,495,237
192 4,495,239
215 4,495,238
319.1 4,495,240
328 4,495,241
336 4,495,242
352 4,495,243
399 4,495,244
403 4,495,245
4,495,246
422 4,495,247
4,495,248
516 4,495,249
520 4,495,250
548 4,495,251
555 4,495,252
624 4,495,253
632 4,495,254
669 4,495,255

CLASS 429

17 4,495,256
100 4,495,257
103 4,495,258
105 4,495,266
161 4,495,259
180 4,495,260

CLASS 430

58 4,495,261
4,495,262
4,495,264
60 4,495,263
95 4,495,265
106.6 4,495,267
122 4,495,268
150 4,495,269
218 4,495,270
277 4,495,271
381 4,495,272
510 4,495,273
523 4,495,274
527 4,495,275
4,495,276
567 4,495,277

CLASS 431

9 4,494,923
78 4,494,924
158 4,494,925
321 4,494,926

CLASS 432

9 4,494,927
13 4,494,928
59 4,494,929
95 4,494,930

CLASS 433

8 4,494,931
88 4,494,932
98 4,494,933
213 4,494,934

CLASS 434

132 4,494,935
273 4,494,936

CLASS 435

5 4,495,278
6 4,495,279
4,495,280
7 4,495,281
68 4,495,282
107 4,495,283
148 4,495,284
215 4,495,285
231 4,495,287
241 4,495,288
253 4,495,286
284 4,495,289
315 4,495,290

CLASS 436

1 4,495,291
25 4,495,292
172 4,495,293
502 4,495,294
518 4,495,295
530 4,495,296

CLASS 440

11 4,494,937

CLASS 441

33 4,494,938
70 4,494,939

CLASS 446

61 4,494,940

CLASS 455

38 4,495,647
73 4,495,648
115 4,495,649
144 4,495,650
151 4,495,654
158 4,495,651
234 4,495,652
277 4,495,653
603 4,495,655
608 4,495,656

CLASS 464

145 4,494,941

CLASS 474

28 4,494,942
4,494,943
82 4,494,944
231 4,494,945
242 4,494,946
251 4,494,947

CLASS 493

11 4,494,948
432 4,494,949

CLASS 501

12 4,495,297
55 4,495,298
72 4,495,299
102 4,495,300
124 4,495,301
125 4,495,302

CLASS 502

62 4,495,303
65 4,495,305
66 4,495,304
185 4,495,306
305 4,495,307
355 4,495,308

CLASS 514

9 4,495,179
17 4,495,178
46 4,495,180
167 4,495,181
210 4,495,197
220 4,495,183
226 4,495,182
238 4,495,184
242 4,495,185
250 4,495,187
255 4,495,186
258 4,495,189
260 4,495,188
262 4,495,190
318 4,495,192
323 4,495,194
383 4,495,191
385 4,495,193
406 4,495,195
427 4,495,196
456 4,495,198
467 4,495,199
560 4,495,201
721 4,495,202
732 4,495,203

CLASS 521

51 4,495,309
99 4,495,310

CLASS 523

105 4,495,312
106 4,495,313
120 4,495,314
125 4,495,315
126 4,495,311
139 4,495,316
414 4,495,317

CLASS 524

96 4,495,319
101 4,495,320
104 4,495,321
198 4,495,322
375 4,495,318
426 4,495,323
504 4,495,324
507 4,495,325
533 4,495,326
556 4,495,327
606 4,495,328

CLASSIFICATION OF PATENTS

774	4,495,329	262	4,495,339		4,495,100		CLASS 546		CLASS 556	412	4,495,368
783	4,495,330		CLASS 528		CLASS 536	146	4,495,354	419	4,495,361	480	4,495,369
	4,495,331	15	4,495,340	18.5	4,495,346	178	4,495,353	436	4,495,360		CLASS 568
800	4,495,332	110	4,495,341	24	4,495,347	209	4,495,355		CLASS 560	322	4,495,370
	CLASS 525	125	4,495,342		CLASS 544	268	4,495,356	20	4,495,362	427	4,495,371
150	4,495,333	292	4,495,343	97	4,495,349	269	4,495,357	155	4,495,363	454	Re.31,812
240	4,495,334	340	4,495,344	021	4,495,348		CLASS 548	180	4,495,364	929	4,495,372
438	4,495,335	372	4,495,345	167	4,495,350	550	4,495,358		CLASS 564		CLASS 585
	CLASS 526		CLASS 534	234	4,495,351		CLASS 549	91	4,495,365	269	4,495,373
88	4,495,337	651	4,495,098	284	4,495,352	356	4,495,359	160	4,495,366	500	4,495,374
125	4,495,338		4,495,099					208	4,495,367		CLASS 604
										66	4,494,950

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D1—	122	277,234		523	277,246		50	277,266		59	277,282	D20—	10	277,298	
	199	277,235	D7—	20	277,251		60	277,267		100	277,283			277,299	
D2—	27	277,236		40	277,252		120	277,268			277,284	D21—	59	277,300	
	233	277,237		320	277,253	D11—	121	277,269	D15—	1	277,285		89	277,301	
	361	277,238		359	277,254		158	277,270		21	277,286		114	277,302	
D6—	324	277,248		387	277,255	D12—	101	277,271		124	277,287		148	277,303	
	351	277,245		394	277,256		146	277,272	D16—	27	277,288		195	277,304	
	356	277,239			277,257		181	277,273		32	277,289	D23—	3	277,305	
	368	277,241	D8—	11	277,258		211	277,274		117	277,290		55	277,306	
	381	277,240		358	277,259	D13—	35	277,275	D17—	14	277,291		90.1	277,307	
		277,242			277,260	D14—	14	277,276		19	277,292		97	277,308	
		277,243			277,261		33	277,277	D18—	13	277,293		141	277,309	
		277,244	D9—	306	277,262			277,278			277,294		149	277,310	
	405	277,247	D10—	26	277,263			277,279	D19—	35	277,295			277,311	
	420	277,250		31	277,264		53	277,280		42	277,296		153	277,312	
	483	277,249			277,265			277,281		75	277,297	D24—	55	277,313	

		277,314													
		277,315													
	64	277,316													
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D25—	7	277,318													
	23	277,319													
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D28—	46	277,321													
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D32—	22	277,325													
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	70	277,327													
D99—	29	277,328													

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P.—	7	5,392		54	5,393		70	5,394		72	5,395				

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04 : 4,494,263	4,494,749	4,495,399	4,495,269	4,494,552	4,494,598
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4,494,523	4,494,752	4,495,443	4,495,372	4,494,662	4,494,726
4,494,666	4,494,753	4,495,460	4,495,380	4,494,663	4,494,779
4,494,674	4,494,768	4,495,462	4,495,431	4,494,670	4,494,883
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4,494,431	4,494,981	4,495,629	4,494,551	4,495,402	4,495,490
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4,494,693	4,495,317	4,494,963	4,494,430	4,495,307	4,495,433
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